United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with Oklahoma Agricultural Experiment Station and the Oklahoma Conservation Commission

Supplement to the Soil Survey of Pawnee County, Oklahoma

How To Use This Soil Survey Supplement

This document, in conjunction with the Web Soil Survey and the Soil Data Mart, supplements the Soil Survey of Pawnee County, Oklahoma, published in 1959. Find a map of your area of interest on Web Soil Survey at http://websoilsurvey.nrcs.usda.gov. Note the map unit symbols in the area. Turn to the Contents in this supplement. The Contents lists the map units by symbol and name and shows the page where each map unit is described. Also see the Contents for sections of this publication that may address your specific needs.

Advancements in technology and increases in the intensity and variety of land uses have produced a need for updated soils information. In preparation for this publication, the soil maps, descriptions, and the correlation for the Soil Survey of Pawnee County were amended in July of 2007. This publication and the Web Soil Survey include the recorrelated map unit legend and updated information regarding major soil properties and the use and management of the soils. In most cases, the name of the map unit and the name of the soil series have changed from the first publication. All of the map unit symbols and the majority of map delineations have changed.

Web Soil Survey

The latest detailed soil maps and updated tabular data, including soil properties and interpretations, are available on Web Soil Survey at http://websoilsurvey.nrcs.usda.gov. The tabular data and maps are also available at http://soildatamart.nrcs.usda.gov.

Archived Soil Survey

Descriptions of the detailed soil map units and additional information about the soils in the survey area are archived in the original Soil Survey of Pawnee County, Oklahoma. Archived soil surveys are available from many libraries, from the local office of the Natural Resources Conservation Service, and from the Pawnee County Conservation District in Pawnee, Oklahoma.

This document is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for the Soil Survey of Pawnee County, Oklahoma, was completed in the period 1951 to 1955. Soil names and descriptions were approved in 1957. Fieldwork for the supplement to the soil survey was completed in 2006. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2006. The maps for this survey were recompiled at a reference scale of 1:24,000 utilizing 2003 digital orthophotography. This survey was made cooperatively by the Natural Resources Conservation Service, the Oklahoma Agricultural Experiment Station, and the Oklahoma Conservation Commission. It is part of the technical assistance furnished to the Pawnee County Conservation District.

Soil maps from the Web Soil Survey or Soil Data Mart may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover: Foraker-Shidler-Lucien complex, 3 to 12 percent slopes, very rocky in foreground, and Keokuk very fine sandy loam, 0 to 1 percent slopes, rarely flooded in background.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service homepage on the World Wide Web. The address is http://www.nrcs.usda.gov

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Issued 2009

Foreword

This soil survey supplement contains information that can be used in conjunction with the previously published soil survey and with online resources. It provides valuable information for land-planning programs in Oklahoma. It contains predictions of soil behavior for selected land uses. This supplement also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

Soil surveys are designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are not suited for use as septic tank absorption fields. A high water table makes a soil very limited for basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Help in using this publication and additional information is available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

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This supplement provides current updated information to the original Soil Survey Report of Pawnee County, Oklahoma issued in 1959 (USDA-SCS, 1959). The original tables and maps were deleted.

New digital maps on updated photography have replaced the original maps, and include updated information. These are available on Web Soil Survey at http://websoilsurvey.nrcs.usda.gov.

Updated tables were generated from the NRCS National Soil Information System (NASIS). These are available on Web Soil Survey at http://websoilsurvey.nrcs.usda.gov and also on the NRCS Soil Data Mart at http://soildatamart.nrcs.usda.gov.

Supplement to the Soil Survey of Pawnee County, Oklahoma

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United States Department of Agriculture,
Natural Resources Conservation Service,
in cooperation with
Oklahoma Agricultural Experiment Station and
the Oklahoma Conservation Commission

General Nature of the Survey Area

PAWNEE COUNTY is in north-central Oklahoma (fig. 1). It has an area of 380,711 acres, or about 595 square miles. Adjacent counties are Osage County on the north, Noble County on the west, Payne and Creek Counties on the south, and Tulsa County on the east. Pawnee, the county seat, is in the west-central part of the county.

Physiography, Relief, and Drainage

Pawnee County is part of the Osage Plains section of the Central Lowlands province of the United States (Thornbury, 1965). It contains parts of three Major Land Resource Areas within its boundaries (USDA, 2006). The western third is in the Central Rolling Red Prairies (80A), the central part is in the Bluestem Hills (76), and the eastern third is in the Cross Timbers (84A).

Elevation ranges from 650 to 1,120 feet. The highest point is in Banner Township southeast of Pawnee, and the lowest point is where the Arkansas River exits the county.

The relief in Pawnee County can be divided into three basic types. Most of the county is dominated by interbedded shale, sandstone, and limestone that have eroded

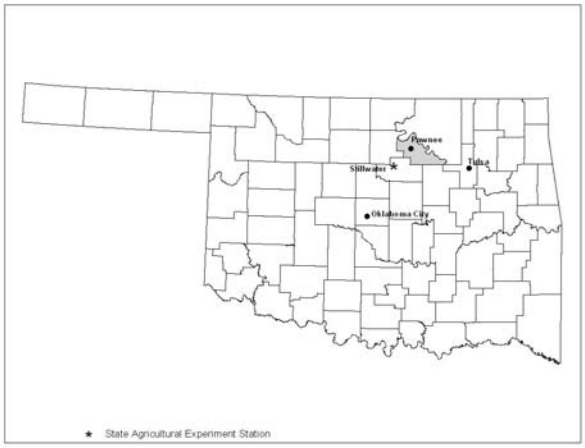

Figure 1.—Location of Pawnee County, Oklahoma.

into low hills with local relief not exceeding about 150 feet. West of Pawnee along Black Bear Creek and along the Arkansas River and Cimarron River are nearly level to gently sloping alluvial terraces. The soils are productive and most are cultivated. The third type of relief is the nearly level floodplains associated with the rivers and major streams.

The Arkansas River, with Black Bear Creek, drain about 75 percent of the county. The Cimarron River drains the part of the county south of U.S. Highway 412 through a number of small tributaries.

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observe the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dig many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind or segment of the landscape. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landscape, soil scientists develop a concept, or model, of how the soils were formed. Thus, during mapping, this model enables the soil scientists to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Individual soils on the landscape commonly merge into one another as their characteristics gradually change. To construct an accurate map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists record the characteristics of the soil profiles that they studied. They note color, texture, size, and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to

identify soils. After describing the soils in a survey area and determining their properties, the soil scientists assign the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classify and name the soils in a survey area, they compare the individual soils with similar soils in the same taxonomic class in other areas so that they can confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists locate and identify the significant natural bodies of soil in the survey area, they draw the boundaries of these bodies on aerial photographs and identify each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

Climate

Prepared by the Natural Resources Conservation Service National Water and Climate Center, Portland, Oregon.

Climate tables are created from climate station Mannford 6 NW Oklahoma.

Thunderstorm days, relative humidity, percent sunshine, and wind information are estimated from First Order station Tulsa, Oklahoma.

Table 1 provides data on temperature and precipitation for the survey area as recorded at Mannford 6 NW in the period 1971 to 2000. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on the length of the growing season.

In winter, the average temperature is 39.4 degrees F and the average daily minimum temperature is 27.5 degrees. The lowest temperature on record, which occurred at Mannford 6 NW on December 23, 1989, is -16 degrees. In summer, the average temperature is 79.8 degrees and the average daily maximum temperature is 92.1 degrees. The highest temperature, which occurred at Mannford 6 NW on July 6, 1996, is 113 degrees.

Growing degree days are shown in Table 1. They are equivalent to "heat units". During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual total precipitation is about 40.21 inches. Of this, about 27.54 inches, or 68 percent, usually falls in April through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 7.40 inches at Mannford 6 NW on September 9, 1971. Thunderstorms occur on about 50 days each year, and most occur in May.

The average seasonal snowfall is 8.3 inches. The greatest snow depth at any one time during the period of record was 10 inches recorded on January 7, 1988. On an average, 3 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 11.0 inches recorded on March 9, 1994.

The average relative humidity in mid-afternoon is about 55 percent. Humidity is higher at night, and the average at dawn is about 82 percent. The sun shines 70 percent of the time in summer and 54 percent in winter. The prevailing wind is from the south. Average wind speed is highest, 11.8 miles per hour, in April.

Table 1.--Temperature and Precipitation

(Recorded in the period 1971-2000 at Mannford 6 NW, Oklahoma)

Month	Temperature			Precipitation						
				2 years in 10 will have--				2 years in 10 will have--		
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snow fall
	°F	°F	°F	°F	°F	Units	In	In	In		
January--	48.3	24.5	36.4	75	-2	15	1.53	0.43	2.56	3	2.9
February-	55.0	29.7	42.3	81	-2	52	2.05	0.82	3.06	4	2.2
March----	64.4	39.0	51.7	89	12	159	3.55	1.74	5.25	5	1.1
April----	74.2	48.3	61.3	93	27	342	3.74	1.72	5.73	5	0.0
May------	79.8	56.8	68.3	93	37	556	5.43	3.21	7.60	7	0.0
June-----	87.7	65.3	76.5	99	48	780	4.28	2.07	6.38	6	0.0
July-----	94.4	69.4	81.9	108	54	954	2.83	1.21	4.42	4	0.0
August---	94.3	67.5	80.9	107	52	933	3.45	1.18	5.75	4	0.0
September	85.2	60.1	72.7	103	36	671	4.23	1.82	6.33	5	0.0
October--	75.0	49.2	62.1	93	26	383	3.58	1.53	5.12	4	0.0
November-	61.1	37.7	49.4	83	13	118	3.36	1.26	5.38	4	0.2
December-	50.7	28.3	39.5	75	1	25	2.18	0.73	3.47	3	1.9
Yearly:											
Average-	72.5	48.0	60.3	---	---	---	---	---	---	---	---
Extreme-	113	-16	---	110	-7	---	---	---	---	---	---
Total---	---	---	---	---	---	4,989	40.21	33.70	46.03	54	8.3

Average number of days per year with at least 1 inch of snow on the ground: 3

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F.)

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1971-2000 at Mannford 6 NW, Oklahoma)

Probability	Temperature		
	24°F or lower	28°F or lower	32°F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	March 25	April 9	April 15
2 years in 10 later than--	March 20	April 5	April 11
5 years in 10 later than--	March 10	March 27	April 4
First freezing temperature in fall:			
1 year in 10 earlier than--	October 28	October 18	October 3
2 years in 10 earlier than--	November 3	October 24	October 9
5 years in 10 earlier than--	November 14	November 4	October 21

Table 3.--Growing Season

(Recorded for the period 1971-2000 at Mannford 6 NW, Oklahoma)

Probability	Daily Minimum Temperature		
	Number of days higher than 24°F	Number of days higher than 28°F	Number of days higher than 32°F
	Days	Days	Days
9 years in 10	228	200	181
8 years in 10	236	208	188
5 years in 10	250	223	201
2 years in 10	265	238	215
1 year in 10	273	246	222

Detailed Soil Map Units

In this section, the detailed soil map units are arranged in alphanumeric order by map unit symbol.

The map units on the detailed soil maps in maps section of this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses. More information about each map unit is given of this survey.

A map unit delineation on the detailed soil maps represents an area on the landscape and consists of one or more soils or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils or miscellaneous areas. Within a taxonomic class, there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, are mapped without areas of minor components of other taxonomic classes. Consequently, map units are made up of the soils or miscellaneous areas for which they are named and some areas of included soils that belong to other taxonomic classes.

Most included soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, inclusions. They may or may not be mentioned in the map unit description. Other included soils and miscellaneous areas, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, inclusions. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of included areas in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but if intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a soil series. Except for differences in texture of the surface layer or of the underlying layers, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement. Composition is based on observations, descriptions, and/or transects of the map unit.

Soils of one series can differ in texture of the surface layer or of the underlying layers. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into soil phases. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Teller silt loam, 3 to 5 percent slopes is a phase of the Teller series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes.

A complex consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Coyle-Lucien complex, 1 to 5 percent slopes is an example.

Table 4 provides the acreage and proportionate extent of each map unit. A complete soil description with range in characteristics is included, in alphabetical order, in the "Formation and Classification of the Soils" section. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
AgrB	Agra silt loam, 1 to 3 percent slopes	4,259	1.1
AgrC	Agra silt loam, 3 to 5 percent slopes	4,270	1.1
AgrC2	Agra silt loam, 3 to 5 percent slopes, eroded	7,988	2.1
AGSD4	Agra-Gullied land-Seminole complex, 3 to 8 percent slopes	2,765	0.7
AhpA	Ashport silty clay loam, 0 to 1 percent slopes, occasionally flooded	93	*
APPA	Ashport, Port, and Pulaski soils, 0 to 1 percent slopes, frequently flooded	18,379	4.8
AspA	Ashport silt loam, 0 to 1 percent slopes, occasionally flooded	1,984	0.5
AsrA	Asher silt loam, 0 to 1 percent slopes, occasionally flooded	359	*
BBgC	Bartlesville-Bigheart complex, 1 to 5 percent slopes, very rocky	11,230	2.9
BetA	Bethany silt loam, 0 to 1 percent slopes	463	0.1
BetB	Bethany silt loam, 1 to 3 percent slopes	1,172	0.3
BrDA	Brewer-Drummond complex, 0 to 1 percent slopes, rarely flooded	322	*
BrrA	Brewer silty clay loam, 0 to 1 percent slopes, rarely flooded	1,729	0.5
BrwA	Brewer silt loam, 0 to 1 percent slopes, rarely flooded	355	*
CloA	Cleora fine sandy loam, 0 to 1 percent slopes, occasionally flooded	207	*
CoLC	Coyle-Lucien complex, 1 to 5 percent slopes	13,245	3.5
CoLC2	Coyle-Lucien complex, 1 to 5 percent slopes, eroded, very rocky	2,917	0.8
CoyB	Coyle loam, 1 to 3 percent slopes	2,060	0.5
CoyC	Coyle loam, 3 to 5 percent slopes	778	0.2
CoZC3	Coyle and Zaneis soils, 3 to 5 percent slopes, severely eroded	225	*
DalA	Dale silt loam, 0 to 1 percent slopes, rarely flooded	3,814	1.0
DAM	Large Dam	230	*
DerE	Derby loamy fine sand, 3 to 15 percent slopes	246	*
DoEF	Dougherty-Eufaula complex, 8 to 20 percent slopes	1,418	0.4
DooB	Doolin silt loam, 1 to 3 percent slopes	876	0.2
DouB	Dougherty loamy fine sand, 0 to 3 percent slopes	856	0.2
DouD	Dougherty loamy fine sand, 3 to 8 percent slopes	2,176	0.6
EasA	Easpur loam, 0 to 1 percent slopes, occasionally flooded	152	*
FSLE	Foraker-Shidler-Lucien complex, 3 to 12 percent slopes, very rocky	27,463	7.2
GadA	Gaddy loamy fine sand, 0 to 1 percent slopes, occasionally flooded	1,539	0.4
GAMD	Grainola-Ashport-Mulhall complex, 0 to 8 percent slopes	11,104	2.9
GdyA	Gaddy loamy fine sand, 0 to 1 percent slopes, frequently flooded	709	0.2
GMLG	Grainola-Masham-Lucien complex, 5 to 40 percent slopes, very bouldery	22	*
GrLC	Grainola-Lucien complex, 1 to 5 percent slopes	12,681	3.3
GrLE	Grainola-Lucien complex, 5 to 12 percent slopes, rocky	11,992	3.1
GRLF	Grainola-Rock outcrop-Lucien complex, 5 to 20 percent slopes	6,328	1.7
GSLF	Grainola-Shidler-Lucien complex, 1 to 20 percent slopes, very rocky	12,967	3.4
HaPE	Harrah-Pulaski complex, 0 to 12 percent slopes, very rocky	1,323	0.3
HarC	Harrah fine sandy loam, 3 to 5 percent slopes	277	*
KekA	Keokuk very fine sandy loam, 0 to 1 percent slopes, rarely flooded	2,006	0.5
KeoA	Keokuk very fine sandy loam, 0 to 1 percent slopes, occasionally flooded	2,025	0.5
KoGD4	Konawa-Gullied land complex, 3 to 8 percent slopes	641	0.2
KowB	Konawa fine sandy loam, 1 to 3 percent slopes	606	0.2
KowC2	Konawa fine sandy loam, 3 to 5 percent slopes, eroded	3,205	0.8
KrdA	Kirkland silt loam, 0 to 1 percent slopes	953	0.3
KrdB	Kirkland silt loam, 1 to 3 percent slopes	1,620	0.4
KrdB2	Kirkland silt loam, 1 to 3 percent slopes, eroded	1,125	0.3
KrPB	Kirkland-Pawhuska complex, 1 to 3 percent slopes	76	*
LawA	Lawrie loam, 0 to 1 percent slopes, rarely flooded	3,027	0.8
LulB	Lula silt loam, 1 to 3 percent slopes	161	*
M-W	Miscellaneous water	60	*
MilB	Milan loam, 1 to 3 percent slopes	1,632	0.4
MilC	Milan loam, 3 to 5 percent slopes	1,212	0.3
MinB	Minco very fine sandy loam, 1 to 3 percent slopes	4	*
MirA	Miller silty clay loam, 0 to 1 percent slopes, occasionally flooded	1,248	0.3
MPNC2	Milan-Pawhuska-Norge complex, 3 to 5 percent slopes, eroded	120	*
MuGD4	Mulhall-Gullied land complex, 3 to 8 percent slopes	1,817	0.5
MulC	Mulhall loam, 3 to 5 percent slopes	3,445	0.9
MulC2	Mulhall loam, 3 to 5 percent slopes, eroded	1,308	0.3
MulD	Mulhall loam, 5 to 8 percent slopes	792	0.2

Table 4.--Acreage and Proportionate Extent of the Soils—Continued

Map symbol	Soil name	Acres	Percent
NBRE	Niotaze-Bigheart-Rock outcrop complex, 3 to 15 percent slopes, extremely stony	30,698	8.1
NBRF	Niotaze-Bigheart-Rock outcrop complex, 15 to 25 percent slopes, rubbly	12,708	3.3
NBRG	Niotaze-Bigheart-Rock outcrop complex, 25 to 45 percent slopes, rubbly	1,283	0.3
NogB	Norge loam, 1 to 3 percent slopes	32	*
NogC	Norge loam, 3 to 5 percent slopes	19	*
NogC2	Norge loam, 3 to 5 percent slopes, eroded	23	*
NorB	Norge silt loam, 1 to 3 percent slopes	6,978	1.8
NorC	Norge silt loam, 3 to 5 percent slopes	4,535	1.2
NorC2	Norge silt loam, 3 to 5 percent slopes, eroded	6,538	1.7
NviA	Navina loam, 0 to 1 percent slopes	370	*
PawB	Pawhuska silt loam, 1 to 3 percent slopes	1,584	0.4
PIT	Pit, quarry	1,871	0.5
PoOA	Port-Oscar complex, 0 to 1 percent slopes, occasionally flooded	18	*
PorA	Port silt loam, 0 to 1 percent slopes, occasionally flooded	6,030	1.6
PotA	Port silty clay loam, 0 to 1 percent slopes, occasionally flooded	178	*
PrGC4	Prue-Gullied land complex, 3 to 5 percent slopes	837	0.2
PruB	Prue loam, 1 to 3 percent slopes	605	0.2
PruC	Prue loam, 3 to 5 percent slopes	999	0.3
PruC2	Prue loam, 3 to 5 percent slopes, eroded	1,969	0.5
PulA	Pulaski fine sandy loam, 0 to 1 percent slopes, occasionally flooded	808	0.2
RefC2	Renfrow loam, 3 to 5 percent slopes, eroded	19	*
RenB	Renfrow silt loam, 1 to 3 percent slopes	9,263	2.4
RenC	Renfrow silt loam, 3 to 5 percent slopes	8,717	2.3
RenC2	Renfrow silt loam, 3 to 5 percent slopes, eroded	10,297	2.7
RGPD3	Renfrow, Grainola, and Pawhuska soils, 3 to 8 percent slopes, severely eroded	2,519	0.7
SemB	Seminole loam, 1 to 3 percent slopes	2,512	0.7
SemC2	Seminole loam, 3 to 5 percent slopes, eroded	1,382	0.4
SFRB	Shidler-Foraker-Rock outcrop complex, 1 to 3 percent slopes	4,696	1.2
SlaG	Slaughterville fine sandy loam, 8 to 45 percent slopes	243	*
StDD	Stephenville-Darnell complex, 3 to 8 percent slopes, rocky	6,198	1.6
StLC	Steedman-Lucien complex, 1 to 5 percent slopes, very rocky	5,311	1.4
StLE	Steedman-Lucien complex, 5 to 12 percent slopes, very rocky	10,897	2.9
StLG	Steedman-Lucien complex, 12 to 45 percent slopes, very rocky	1,025	0.3
TeaA	Tearney silty clay, 0 to 1 percent slopes, ponded	782	0.2
TelB	Teller loam, 1 to 3 percent slopes	3,108	0.8
TelC	Teller loam, 3 to 5 percent slopes	951	0.2
TelC2	Teller loam, 3 to 5 percent slopes, eroded	3,137	0.8
URB	Urban Land	1,466	0.4
VanA	Vanoss silt loam, 0 to 1 percent slopes	3,592	0.9
W	Water	19,642	5.2
WolB	Wolco silty clay loam, 1 to 3 percent slopes	1,355	0.4
ZaHC	Zaneis-Huska complex, 1 to 5 percent slopes	5,875	1.5
ZaHC2	Zaneis-Huska complex, 1 to 5 percent slopes, eroded	920	0.2
ZanB	Zaneis loam, 1 to 3 percent slopes	665	0.2
	Total	380,711	100.0

* Less than 0.1 percent.

AgrB—Agra silt loam, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,200 feet (213 to 366 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Agra and similar soils: 85 percent

Additional Components:
Coyle: 3 percent
Huska: 3 percent
Mulhall: 3 percent
Norge: 3 percent
Seminole: 3 percent

Component Description

Agra
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from clayey shale

Representative profile location: About 2,000 feet west and 1,050 feet south of the northeast corner, section 12, T. 19 N., R. 5 E., Payne County, Oklahoma.

Typical Profile

A—0 to 11 inches; neutral silt loam
BA—11 to 16 inches; neutral silty clay loam
Bt1—16 to 30 inches; neutral silty clay
Bt2—30 to 42 inches; slightly alkaline silty clay
BC—42 to 80 inches; moderately alkaline silty clay

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.1 inches (High)
Natural drainage class: Moderately well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2e
Ecological site name: Claypan Prairie (North) PE 44-64
Ecological site number: R080AY010OK

AgrC—Agra silt loam, 3 to 5 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,200 feet (213 to 366 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Agra and similar soils: 80 percent

Additional Components:
Coyle: 5 percent
Mulhall: 5 percent
Norge: 5 percent
Steedman: 5 percent

Component Description

Agra
Landscape: Uplands (fig. 2)
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from clayey shale

Representative profile location: About 2,300 feet north and 1,400 feet east of the southwest corner, section 25, T. 18 N., R. 5 E., Payne County, Oklahoma.

Typical Profile

A—0 to 14 inches; neutral silt loam
BA—14 to 19 inches; neutral silty clay loam
Bt1—19 to 30 inches; neutral silty clay loam
Bt2—30 to 45 inches; slightly alkaline silty clay
BC—45 to 80 inches; moderately alkaline silty clay

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.2 inches (High)
Natural drainage class: Moderately well drained

Figure 2.—Native grass hay meadow (Claypan Prairie ecological site) on AgrC—Agra silt loam, 3 to 5 percent slopes.

Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Claypan Prairie (North) PE 44-64
Ecological site number: R080AY010OK

AgrC2—Agra silt loam, 3 to 5 percent slopes, eroded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,200 feet (213 to 366 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Agra and similar soils: 85 percent

Additional Components:
Coyle: 3 percent
Huska: 3 percent
Mulhall: 3 percent
Norge: 3 percent
Steedman: 3 percent

Component Description

Agra
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from clayey shale

Representative profile location: About 1,850 feet east and 150 feet south of the northwest corner, section 12, T. 19 N., R. 5 E., Payne County, Oklahoma.

Typical Profile

Ap—0 to 6 inches; neutral silt loam
Bt1—6 to 22 inches; neutral silty clay loam
Bt2—22 to 35 inches; slightly alkaline clay
BC—35 to 80 inches; moderately alkaline clay

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 9.7 inches (High)
Natural drainage class: Moderately well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Eroded Claypan Prairie (North) PE 44-64
Ecological site number: R080AY810OK

AGSD4—Agra-Gullied land-Seminole complex, 3 to 8 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)

Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Agra and similar soils: 55 percent
Gullied land and similar soils: 25 percent
Seminole and similar soils: 10 percent

Additional Components:
Steedman: 5 percent
Mulhall: 3 percent
Coyle: 2 percent

Component Description

Agra
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from clayey shale

Representative profile location: About 2,000 feet west and 550 feet north of the southeast corner, section 4, T. 21 N., R. 6 E., Pawnee County, Oklahoma.

Typical Profile

Ap—0 to 4 inches; neutral silt loam
Bt1—4 to 22 inches; neutral silty clay loam
Bt2—22 to 35 inches; slightly alkaline clay
BC—35 to 61 inches; moderately alkaline clay

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 9.6 inches (High)
Natural drainage class: Moderately well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Eroded Claypan Prairie (North) PE 44-64
Ecological site number: R080AY810OK

Gullied land
Landscape: Uplands
Landforms: Gullies on hillslopes on low hills

Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Clayey and loamy residuum weathered from sandstone and shale

Properties and Qualities

Slope: 3 to 8 percent
Depth to first restrictive layer: Not present
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Runoff: Very high
Flooding frequency: Not flooded
Ponding frequency: Not ponded
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 8e

Seminole
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Saline clayey residuum weathered from shale

Representative profile location: About 1,975 feet west and 700 feet north of the southeast corner, section 4, T. 21 N., R. 6 E., Pawnee County, Oklahoma.

Typical Profile

Ap—0 to 4 inches; slightly acid silt loam
Btn—4 to 16 inches; neutral clay
Bt—16 to 80 inches; neutral silty clay

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Sodic
Representative total available water capacity to 60 inches: About 8.0 inches (Moderate)
Natural drainage class: Moderately well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6s

Ecological site name: Eroded Loamy Prairie PE 44-64
Ecological site number: R080AY856OK

AhpA—Ashport silty clay loam, 0 to 1 percent slopes, occasionally flooded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Ashport and similar soils: 90 percent

Additional Components:
Miller: 5 percent
Pulaski: 3 percent
Oscar: 2 percent

Component Description

Ashport
Landscape: Valleys
Landforms: Valley flats on low flood plains (fig. 3)
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Representative profile location: About 800 feet west and 100 feet north of the southeast corner, section 10, T. 21 N., R. 3 E., Noble County, Oklahoma.

Typical Profile

Ap—0 to 10 inches; neutral silty clay loam
Bw1—10 to 25 inches; neutral silty clay loam
Bw2—25 to 35 inches; neutral silty clay loam
C—35 to 42 inches; neutral stratified fine sandy loam to silty clay loam
Ab1—42 to 52 inches; neutral silty clay loam
Ab2—52 to 80 inches; neutral silty clay loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 11.9 inches (High)
Natural drainage class: Well drained
Runoff: Negligible

Figure 3.—Bermudagrass and pecan trees on AhpA—Ashport silty clay loam, 0 to 1 percent slopes, occasionally flooded.

Flooding frequency: Occasional
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2w
Ecological site name: Loamy Bottomland PE 44-64
Ecological site number: R080AY050OK

APPA—Ashport, Port, and Pulaski soils, 0 to 1 percent slopes, frequently flooded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Ashport and similar soils: 61 percent
Port and similar soils: 15 percent

Pulaski and similar soils: 15 percent

Additional Components:
Easpur: 9 percent

Component Description

Ashport
Landscape: Valleys
Landforms: Valley flats on low flood plains (fig. 4)
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Representative profile location: About 2,525 feet south and 300 feet east of the northwest corner, section 33, T. 21 N., R. 1 W., Noble County, Oklahoma.

Typical Profile

A—0 to 14 inches; neutral silty clay loam
Bw—14 to 27 inches; neutral silt loam
C—27 to 80 inches; neutral stratified fine sandy loam to silty clay loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)

Figure 4.—Native range (Loamy Bottomland ecological site) in an area of APPA—Ashport, Port, and Pulaski soils, 0 to 1 percent slopes, frequently flooded.

Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 11.9 inches (High)
Natural drainage class: Well drained
Runoff: Negligible
Flooding frequency: Frequent
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 5w
Ecological site name: Loamy Bottomland PE 44-64
Ecological site number: R080AY050OK

Port
Landscape: Valleys
Landforms: Flood plains (fig. 4)
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous loamy alluvium

Representative profile location: About 2,550 feet south and 200 feet east of the northwest corner, section 33, T. 21 N., R. 1 W., Noble County, Oklahoma.

Typical Profile

Ap—0 to 7 inches; slightly acid fine sandy loam
A—7 to 27 inches; neutral silt loam
Bw—27 to 46 inches; neutral silt loam
Ab—46 to 51 inches; neutral silt loam
Bwb—51 to 80 inches; neutral silt loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 11.7 inches (High)
Natural drainage class: Well drained
Runoff: Negligible
Flooding frequency: Frequent
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 5w
Ecological site name: Loamy Bottomland PE 44-64
Ecological site number: R080AY050OK

Pulaski
Landscape: Valleys
Landforms: Flood plains (fig. 4)
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Representative profile location: About 2,550 feet south and 400 feet east of the northwest corner, section 33, T. 21 N., R. 1 W., Noble County, Oklahoma.

Typical Profile

A—0 to 9 inches; slightly acid fine sandy loam
C1—9 to 25 inches; slightly acid fine sandy loam
C2—25 to 80 inches; neutral stratified loamy fine sand to loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (Moderately rapid)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 8.9 inches (Moderate)
Natural drainage class: Well drained
Runoff: Negligible
Flooding frequency: Frequent
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 5w
Ecological site name: Loamy Bottomland PE 48-64
Ecological site number: R084AY050OK

AspA—Ashport silt loam, 0 to 1 percent slopes, occasionally flooded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Ashport and similar soils: 90 percent

Additional Components:
Oscar: 5 percent

Pulaski: 3 percent
Easpur: 2 percent

Component Description

Ashport
Landscape: Valleys
Landforms: Valley flats on low flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Representative profile location: About 2,300 feet south and 200 feet east of the northwest corner, section 11, T. 21 N., R. 3 E., Noble County, Oklahoma.

Typical Profile

Ap—0 to 10 inches; neutral silt loam
Bw—10 to 32 inches; neutral silty clay loam
Ab—32 to 45 inches; neutral silty clay loam
Bwb1—45 to 70 inches; neutral silty clay loam
Bwb2—70 to 80 inches; neutral silty clay loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 12.0 inches (Very high)
Natural drainage class: Well drained
Runoff: Negligible
Flooding frequency: Occasional
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2w
Ecological site name: Loamy Bottomland PE 44-64
Ecological site number: R080AY050OK

AsrA—Asher silt loam, 0 to 1 percent slopes, occasionally flooded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Asher and similar soils: 82 percent

Additional Components:
Keokuk: 8 percent
Ashport: 5 percent
Gaddy: 5 percent

Component Description

Asher
Landscape: Valleys
Landforms: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Representative profile location: About 300 feet east and 3,100 feet north of the southwest corner, section 15, T. 24 N., R. 5 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 12 inches; neutral silt loam
Bw—12 to 28 inches; slightly alkaline silty clay loam
2C—28 to 80 inches; slightly alkaline stratified loamy very fine sand to silty clay loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.7 inches (High)
Natural drainage class: Moderately well drained
Runoff: Medium
Flooding frequency: Occasional
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 1
Ecological site name: Loamy Bottomland PE 44-64
Ecological site number: R080AY050OK

BBgC—Bartlesville-Bigheart complex, 1 to 5 percent slopes, very rocky

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)

Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Bartlesville and similar soils: 57 percent
Bigheart and similar soils: 23 percent

Additional Components:
Niotaze: 9 percent
Rock outcrop: 5 percent
Bates: 4 percent
Prue: 2 percent

Component Description

Bartlesville
Landscape: Uplands
Landforms: Hillslopes on low hills (fig. 5)
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone

Representative profile location: About 2,300 feet south and 650 feet east of the northwest corner, section 23, T. 27 N., R. 10 E., Osage County, Oklahoma (fig. 6).

Figure 5.—Overstory and understory vegetation (Sandy Savannah and Shallow Savannah ecological sites) on an area of BBgC—Bartlesville-Bigheart complex, 1 to 5 percent slopes, very rocky.

Figure 6.—Profile of Bigheart fine sandy loam in an area of BBgC—Bartlesville-Bigheart complex, 1 to 5 percent slopes, very rocky.

Typical Profile

A—0 to 4 inches; moderately acid fine sandy loam
E—4 to 9 inches; moderately acid fine sandy loam
Bt1—9 to 15 inches; strongly acid sandy clay loam
Bt2—15 to 20 inches; strongly acid sandy clay loam
Bt3—20 to 28 inches; strongly acid sandy clay loam
Bt4—28 to 36 inches; strongly acid sandy clay loam
Cr—36 to 41 inches; bedrock
R—41 to 45 inches; bedrock

Properties and Qualities

Slope: 1 to 5 percent
Depth to first restrictive layer: 20 to 39 inches to paralithic bedrock; 22 to 47 inches lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 5.6 inches (Low)
Natural drainage class: Moderately well drained

Runoff: Low
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Sandy Savannah PE 48-64
Ecological site number: R084AY075OK

Bigheart
Landscape: Uplands
Landforms: Hillslopes on low hills (fig. 5)
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Representative profile location: About 2,350 feet south and 1,100 feet east of the northwest corner, section 23, T. 27 N., R. 10 E., Osage County, Oklahoma.

Typical Profile

A—0 to 5 inches; strongly acid fine sandy loam
Bw1—5 to 11 inches; strongly acid fine sandy loam
Bw2—11 to 15 inches; moderately acid fine sandy loam
R—15 to 39 inches; bedrock

Properties and Qualities

Slope: 1 to 5 percent
Depth to first restrictive layer: 10 to 20 inches to lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 2.1 inches (Very low)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4s
Ecological site name: Shallow Savannah PE 48-64
Ecological site number: R084AY088OK

BetA—Bethany silt loam, 0 to 1 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies

Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Bethany and similar soils: 85 percent

Additional Components:
Kirkland: 5 percent
Norge: 5 percent
Tabler: 5 percent

Component Description

Bethany
Landscape: Uplands
Landforms: Plains on paleoterraces
Geomorphic positions, three-dimensional: Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium over clayey residuum weathered from shale

Representative profile location: About 1,900 feet north and 800 feet west of the southeast corner, section 17, T. 24 N., R. 1 E., Noble County, Oklahoma.

Typical Profile

Ap—0 to 9 inches; slightly acid silt loam
BA—9 to 12 inches; neutral silty clay loam
Bt—12 to 30 inches; slightly alkaline silty clay
Btk—30 to 47 inches; slightly alkaline silty clay
Btb1—47 to 71 inches; slightly alkaline silty clay
Btb2—71 to 80 inches; slightly alkaline silty clay

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.5 inches (High)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 1
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

BetB—Bethany silt loam, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland (fig. 7)

Composition

Bethany and similar soils: 84 percent

Additional Components
Kirkland: 6 percent
Norge: 6 percent
Renfrow: 3 percent
Pawhuska: 1 percent

Component Description

Bethany
Landscape: Uplands (fig. 8)
Landforms: Plains on paleoterraces
Geomorphic positions, three-dimensional: Tread

Figure 7.—Wheat hay being harvested on an area of BetB—Bethany silt loam, 1 to 3 percent slopes.

Figure 8.—Recovery of native vegetation (Loamy Prairie ecological site) following prescribed burning on BetB—Bethany silt loam, 1 to 3 percent slopes.

Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium over clayey residuum weathered from shale

Representative profile location: About 2,000 feet west and 100 feet south of the northeast corner, section 9, T. 20 N., R. 1 E., Noble County, Oklahoma.

Typical Profile

Ap—0 to 11 inches; slightly acid silt loam
BA—11 to 16 inches; neutral silty clay loam
Bt1—16 to 36 inches; slightly alkaline silty clay loam
Bt2—36 to 60 inches; slightly alkaline silty clay loam
Bt3—60 to 80 inches; slightly alkaline silty clay loam

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.6 inches (High)
Natural drainage class: Well drained

Runoff: High
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2e
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

BrDA—Brewer-Drummond complex, 0 to 1 percent slopes, rarely flooded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Brewer and similar soils: 80 percent
Drummond and similar soils: 15 percent

Additional Components:
Port: 5 percent

Component Description

Brewer
Landscape: Valleys
Landforms: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Loamy and clayey alluvium Representative profile location: About 550 feet south and 2,600 feet west of the northeast corner, section 23, T. 21 N., R. 5 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 12 inches; slightly acid silty clay loam
Bt1—12 to 30 inches; neutral silty clay loam
Bt2—30 to 50 inches; neutral silty clay
BC—50 to 80 inches; slightly alkaline silty clay loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.6 inches (High)
Natural drainage class: Moderately well drained
Runoff: Medium
Flooding frequency: Rare
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 1
Ecological site name: Clayey Bottomland PE 44-64
Ecological site number: R080AY045OK

Drummond
Landscape: Valleys
Landforms: Flood plains
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Calcareous clayey and loamy alluvium

Representative profile location: About 650 feet south and 1,150 feet west of the northeast corner, section 23, T. 21 N., R. 5 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 9 inches; neutral silt loam
Btn—9 to 18 inches; moderately alkaline silty clay loam
BC—18 to 36 inches; moderately alkaline silty clay
C1—36 to 72 inches; moderately alkaline silty clay
C2—72 to 80 inches; moderately alkaline fine sandy loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Sodic
Representative total available water capacity to 60 inches: About 8.0 inches (Moderate)
Natural drainage class: Somewhat poorly drained
Runoff: High
Flooding frequency: Rare
Ponding frequency: None
Depth to seasonal water table: Present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4s
Ecological site name: Alkali Bottomland PE 44-64
Ecological site number: R080AY001OK

BrrA—Brewer silty clay loam, 0 to 1 percent slopes, rarely flooded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Brewer and similar soils: 86 percent

Additional Components:
Dale: 7 percent
Port: 7 percent

Component Description

Brewer
Landscape: Valleys (fig. 9)
Landforms: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy and clayey alluvium

Representative profile location: About 200 feet east and 900 feet north of the southwest corner, section 29, T. 22 N., R. 5 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 12 inches; slightly acid silty clay loam
Bt1—12 to 30 inches; neutral silty clay loam
Bt2—30 to 50 inches; neutral silty clay
BC—50 to 80 inches; slightly alkaline silty clay loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.6 inches (High)
Natural drainage class: Moderately well drained
Runoff: Medium
Flooding frequency: Rare
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Figure 9.—Surface crusting following a rainstorm on BrrA—Brewer silty clay loam, 0 to 1 percent slopes, rarely flooded.

Interpretive Groups

Land capability nonirrigated: 1
Ecological site name: Clayey Bottomland PE 44-64
Ecological site number: R080AY045OK

BrwA—Brewer silt loam, 0 to 1 percent slopes, rarely flooded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Brewer and similar soils: 97 percent

Additional Components:
Drummond: 3 percent

Component Description

Brewer
Landscape: Valleys
Landforms: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy and clayey alluvium

Representative profile location: About 200 feet south and 100 feet east of the northwest corner, section 9, T. 23 N., R. 2 E., Noble County, Oklahoma.

Typical Profile

Ap—0 to 11 inches; slightly acid silt loam
A—11 to 23 inches; slightly acid silt loam
Bt—23 to 40 inches; neutral silty clay loam
Btk—40 to 48 inches; slightly alkaline silty clay loam
BC—48 to 80 inches; slightly alkaline silty clay loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.9 inches (High)
Natural drainage class: Moderately well drained
Runoff: Low
Flooding frequency: Rare
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 1
Ecological site name: Loamy Bottomland PE 44-64
Ecological site number: R080AY050OK

CloA—Cleora fine sandy loam, 0 to 1 percent slopes, occasionally flooded

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 295 to 1,000 feet (91 to 305 meters)
Mean annual precipitation: 36 to 56 inches (914 to 1,422 millimeters)
Mean annual air temperature: 57 to 68 degrees F (14 to 20 degrees C)
Frost-free period: 190 to 220 days
Prime Farmland class: All areas are prime farmland

Composition

Cleora and similar soils: 100 percent

Component Description

Cleora
Landscape: Valleys
Landforms: Natural levees on flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Representative profile location: About 750 feet west and 690 feet north of the southeast corner, section 4, T. 19 N., R 10 E., Tulsa County, Oklahoma.

Typical Profile

A—0 to 11 inches; slightly acid fine sandy loam
AC—11 to 31 inches; slightly acid fine sandy loam
C—31 to 62 inches; slightly acid stratified loamy fine sand to loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (Moderately rapid)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 8.7 inches (Moderate)
Natural drainage class: Well drained
Runoff: Very low
Flooding frequency: Occasional
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2w
Ecological site name: Loamy Bottomland PE 62-80
Ecological site number: R112XY050OK

CoLC—Coyle-Lucien complex, 1 to 5 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Coyle and similar soils: 60 percent
Lucien and similar soils: 32 percent

Additional Components:
Huska: 5 percent
Grainola: 3 percent

Component Description

Coyle
Landscape: Uplands
Landforms: Hillslopes on low hills (fig. 10)
Geomorphic positions, two-dimensional: Shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone

Representative profile location: About 2,950 feet east and 2,450 feet south of the northwest corner, section 2, T. 22 N., R. 1 E., Noble County, Oklahoma.

Typical Profile

Ap—0 to 7 inches; neutral loam
BA—7 to 11 inches; neutral loam
Bt1—11 to 16 inches; neutral clay loam
Bt2—16 to 31 inches; neutral clay loam
Cr—31 to 35 inches; bedrock

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: 20 to 40 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)

Figure 10.—Rangeland (Loamy Prairie and Shallow Prairie ecological sites) on an area of CoLC—Coyle-Lucien complex, 1 to 5 percent slopes. These soils form in residuum weathered from sandstone that forms the summits of hills.

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 4.8 inches (Low)
Natural drainage class: Well drained
Runoff: High
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3s
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

Lucien
Landscape: Uplands
Landforms: Hillslopes on low hills (fig. 10)
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone and shale

Representative profile location: 3,000 feet east and 2,450 feet south of the northwest corner, section 2, T. 22 N., R. 1 E., Noble County, Oklahoma.

Typical Profile

A—0 to 4 inches; neutral very fine sandy loam
BA—4 to 8 inches; slightly acid very fine sandy loam
Bw—8 to 13 inches; slightly acid very fine sandy loam
Cr—13 to 17 inches; bedrock

Properties and Qualities

Slope: 1 to 5 percent
Depth to first restrictive layer: 10 to 20 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (Moderately rapid)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 2.2 inches (Very low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4s

Ecological site name: Shallow Prairie PE 44-64
Ecological site number: R080AY083OK

CoLC2—Coyle-Lucien complex, 1 to 5 percent slopes, eroded, very rocky

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map unit note: The soils in this complex occur in a regular and repeating pattern. They are so intermingled that individual areas of the named soils could not be separated at the reference scale of 1:24,000. These areas are, or have been cultivated, and are moderately eroded. In most areas, the upper part of the subsoil has been incorporated into the plow layer. In some areas, surface rills and small gullies are common.
Prime Farmland class: Not prime farmland

Composition

Coyle and similar soils: 59 percent
Lucien and similar soils: 32 percent

Additional Components:
Rock outcrop: 5 percent
Grainola: 4 percent

Component Description

Coyle
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone

Representative profile location: About 1,900 feet west and 550 feet north of the southeast corner, section 26, T. 22 N., R. 4 E., Pawnee County, Oklahoma.

Typical Profile

Ap—0 to 5 inches; neutral very fine sandy loam
BA—5 to 9 inches; neutral loam
Bt1—9 to 22 inches; neutral sandy clay loam
Bt2—22 to 27 inches; neutral sandy clay loam
Cr—27 to 38 inches; bedrock

Properties and Qualities

Slope: 1 to 3 percent
Percent of area covered by surface fragments: About 2 percent subangular cobbles
Depth to first restrictive layer: 20 to 40 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 4.2 inches (Low)
Natural drainage class: Well drained
Runoff: High
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3s
Ecological site name: Eroded Loamy Prairie PE 44-64
Ecological site number: R080AY856OK

Lucien
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone and shale

Representative profile location: About 2,000 feet west and 900 feet north of the southeast corner, section 26, T. 22 N., R. 4 E., Pawnee County, Oklahoma.

Typical Profile

Ap—0 to 5 inches; neutral very fine sandy loam
Bw—5 to 10 inches; slightly acid very fine sandy loam
Cr—10 to 14 inches; bedrock

Properties and Qualities

Slope: 1 to 5 percent
Depth to first restrictive layer: 10 to 20 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (Moderately rapid)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 1.7 inches (Very low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4s
Ecological site name: Eroded Shallow Prairie PE 44-64
Ecological site number: R080AY883OK

CoyB—Coyle loam, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Coyle and similar soils: 85 percent

Additional Components:
Grainola: 5 percent
Huska: 5 percent
Lucien: 5 percent

Component Description

Coyle
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone

Representative profile location: About 1,300 feet north and 700 feet west of the southeast corner, section 36, T. 20 N., R. 1 W., Noble County, Oklahoma.

Typical Profile

A—0 to 10 inches; neutral loam
Bt1—10 to 17 inches; neutral sandy clay loam
Bt2—17 to 23 inches; neutral sandy clay loam
BC—23 to 35 inches; neutral sandy clay loam
Cr—35 to 39 inches; bedrock

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: 20 to 40 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 5.4 inches (Low)
Natural drainage class: Well drained
Runoff: High
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3s
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

CoyC—Coyle loam, 3 to 5 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Coyle and similar soils: 82 percent

Additional Components
Grainola: 5 percent
Huska: 5 percent
Lucien: 5 percent
Mulhall: 3 percent

Component Description

Coyle
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone

Representative profile location: About 2,250 feet west and 150 feet north of the southeast corner, section 27, T. 20 N., R. 1 W., Noble County, Oklahoma.

Typical Profile

A—0 to 8 inches; neutral loam
BA—8 to 11 inches; neutral loam
Bt—11 to 20 inches; neutral sandy clay loam
BC—20 to 31 inches; neutral loam
Cr—31 to 35 inches; bedrock

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: 20 to 40 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 4.9 inches (Low)
Natural drainage class: Well drained
Runoff: High
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

CoZC3—Coyle and Zaneis soils, 3 to 5 percent slopes, severely eroded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map unit note: All these areas have been cultivated, and erosion has caused gullies 1 to 5 feet deep, 10 to 50 feet wide, and 25 to 150 feet apart. The uncrossable gullies are 100 to 300 feet apart. About 50 percent of the remaining area is moderately eroded. The pattern of soils in this undifferentiated unit is variable from one area to another. Most areas are made up of both named soils, but some areas may be only Coyle soil.
Prime Farmland class: Not prime farmland

Composition

Coyle and similar soils: 45 percent
Zaneis and similar soils: 30 percent

Additional Components:
Grainola: 5 percent
Lucien: 5 percent
Chickasha: 3 percent
Huska: 3 percent
Mulhall: 3 percent
Renfrow: 3 percent
Stephenville: 3 percent

Component Description

Coyle
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone

Representative profile location: About 1,350 feet east and 400 feet north of the southwest corner, section 12, T. 19 N., R. 1 W., Payne County, Oklahoma.

Typical Profile

Ap—0 to 4 inches; neutral very fine sandy loam
BA—4 to 9 inches; neutral loam
Bt1—9 to 20 inches; neutral sandy clay loam
Bt2—20 to 25 inches; neutral sandy clay loam
Cr—25 to 29 inches; bedrock

Properties and Qualities

Slope: 3 to 5 percent
Percent of area covered by surface fragments: About 2 percent subangular cobbles
Depth to first restrictive layer: 20 to 40 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 3.9 inches (Low)
Natural drainage class: Well drained
Runoff: High
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Eroded Loamy Prairie PE 44-64
Ecological site number: R080AY856OK

Zaneis
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone and shale

Representative profile location: About 1,600 feet east and 400 feet north of the southwest corner, section 12, T. 19 N., R. 1 W., Payne County, Oklahoma.

Typical Profile

Ap—0 to 7 inches; slightly acid loam
Bt1—7 to 23 inches; slightly acid clay loam
Bt2—23 to 48 inches; neutral clay loam
Cr—48 to 52 inches; bedrock

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: 40 to 60 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 7.8 inches (Moderate)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Eroded Loamy Prairie PE 44-64
Ecological site number: R080AY856OK

DalA—Dale silt loam, 0 to 1 percent slopes, rarely flooded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Dale and similar soils: 90 percent

Additional Components:
Easpur: 5 percent
Oscar: 3 percent
Port: 2 percent

Component Description

Dale
Landscape: Valleys
Landforms: Flood plains (fig. 11)
Down-slope shape: Linear
Across-slope shape: Linear

Figure 11.—Winter wheat on DalA—Dale silt loam, 0 to 1 percent slopes, rarely flooded.

Parent material: Loamy alluvium

Representative profile location: About 1,100 feet east and 1,200 feet south of the northwest corner, section 27, T. 21 N., R. 1 W., Noble County, Oklahoma.

Typical Profile

Ap—0 to 7 inches; neutral silt loam
A—7 to 21 inches; neutral silt loam
Bw1—21 to 60 inches; slightly alkaline silty clay loam
Bw2—60 to 80 inches; slightly alkaline silty clay loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 12.0 inches (Very high)
Natural drainage class: Well drained
Runoff: Negligible
Flooding frequency: Rare
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 1
Ecological site name: Loamy Bottomland PE 44-64
Ecological site number: R080AY050OK

DAM—Large Dam

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Dam and similar soils: 100 percent

Component Description

Dam
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mine spoil or earthy fill

Typical Profile

C—0 to 60 inches; variable

Representative profile location: About 1,600 feet north and 450 feet west of the southeast corner, section 34, T. 20 N., R. 1 E., Noble County, Oklahoma.

Properties and Qualities

Slope: 0 to 45 percent
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 0.0 inches (Very low)
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 8

DerE—Derby loamy fine sand, 3 to 15 percent slopes

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 695 to 1,495 feet (213 to 457 meters)

Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Derby and similar soils: 90 percent

Additional Components:
Eufaula: 4 percent
Goodnight: 4 percent
Slaughterville: 2 percent

Component Description

Derby
Landscape: Dune fields, sandhills, valleys
Landforms: Dunes
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy eolian deposits

Representative profile location: About 1,300 feet north and 2,450 feet west of the northeast corner, section 4, T. 18 N., R. 5 E., Payne County, Oklahoma.

Typical Profile

A1—0 to 6 inches; slightly acid loamy sand
A2—6 to 24 inches; neutral loamy fine sand
E—24 to 54 inches; neutral loamy fine sand
E and Bt—54 to 112 inches; neutral stratified fine sand to loamy fine sand

Properties and Qualities

Slope: 3 to 15 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 6.0 to 20 in/hr (Rapid)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 4.9 inches (Low)
Natural drainage class: Somewhat excessively drained
Runoff: Very low
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Deep Sand Savannah PE 48-64
Ecological site number: R084AY018OK

DoEF—Dougherty-Eufaula complex, 8 to 20 percent slopes

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Dougherty and similar soils: 53 percent
Eufaula and similar soils: 40 percent

Additional Components:
Derby: 3 percent
Slaughterville: 2 percent
Teller: 2 percent

Component Description

Dougherty
Landscape: Dune fields, sandhills, valleys
Landforms: Dunes
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and loamy alluvium and/or sandy eolian deposits

Representative profile location: About 550 feet west and 800 feet north of the southeast corner, section 4, T. 17 N., R. 1 E., Payne County, Oklahoma.

Typical Profile

A—0 to 14 inches; moderately acid loamy fine sand
E—14 to 32 inches; moderately acid loamy fine sand
Bt—32 to 56 inches; moderately acid sandy clay loam
BC—56 to 65 inches; moderately acid fine sandy loam
C—65 to 80 inches; slightly acid loamy fine sand

Properties and Qualities

Slope: 8 to 20 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 6.5 inches (Moderate)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Deep Sand Savannah PE 48-64
Ecological site number: R084AY018OK

Eufaula
Landscape: Dune fields, sandhills, valleys
Landforms: Dunes on dune fields on terraces
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Eolian sands

Representative profile location: About 600 feet west and 700 feet north of the southeast corner, section 4, T. 17 N., R. 1 E., Payne County, Oklahoma.

Typical Profile

A—0 to 11 inches; slightly acid loamy fine sand
E—11 to 48 inches; slightly acid fine sand
E and Bt—48 to 80 inches; slightly acid stratified fine sand to loamy fine sand

Properties and Qualities

Slope: 8 to 20 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 6.0 to 20 in/hr (Rapid)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 5.4 inches (Low)
Natural drainage class: Somewhat excessively drained
Runoff: Very low
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Deep Sand Savannah PE 48-64
Ecological site number: R084AY018OK

DooB—Doolin silt loam, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Doolin and similar soils: 80 percent

Additional Components:
Zaneis: 10 percent
Huska: 5 percent
Kirkland: 5 percent

Component Description

Doolin
Landscape: Uplands
Landforms: Plains on paleoterraces
Geomorphic positions, three-dimensional: Riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Silty and clayey alluvium over loamy residuum weathered from sandstone

Representative profile location: About 1,100 feet west and 50 feet south of the northeast corner, section 2, T. 19 N., R. 4 E., Payne County, Oklahoma.

Typical Profile

A—0 to 12 inches; neutral silt loam
Btn—12 to 32 inches; neutral silty clay loam
2Btn—32 to 68 inches; moderately alkaline clay loam
2Cr—68 to 72 inches; bedrock

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: 60 to 80 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Sodic
Representative total available water capacity to 60 inches: About 7.2 inches (Moderate)
Natural drainage class: Moderately well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4s
Ecological site name: Claypan Prairie (North) PE 44-64
Ecological site number: R080AY010OK

DouB—Dougherty loamy fine sand, 0 to 3 percent slopes

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 695 to 1,295 feet (213 to 396 meters)

Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Dougherty and similar soils: 90 percent

Additional Components:
Eufaula: 3 percent
Konawa: 3 percent
Slaughterville: 2 percent
Teller: 2 percent

Component Description

Dougherty
Landscape: Dune fields, sandhills, valleys
Landforms: Dunes
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and loamy alluvium and/or sandy eolian deposits

Representative profile location: About 1,600 feet north and 2,100 feet east of the southwest corner, section 27, T. 19 N., R. 5 E., Payne County, Oklahoma.

Typical Profile

Ap—0 to 4 inches; moderately acid loamy fine sand
E—4 to 26 inches; moderately acid loamy fine sand
Bt—26 to 50 inches; moderately acid sandy clay loam
BC—50 to 72 inches; moderately acid fine sandy loam
C—72 to 80 inches; slightly acid loamy fine sand

Properties and Qualities

Slope: 0 to 3 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 6.7 inches (Moderate)
Natural drainage class: Well drained
Runoff: Very low
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Deep Sand Savannah PE 48-64
Ecological site number: R084AY018OK

DouD—Dougherty loamy fine sand, 3 to 8 percent slopes

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Dougherty and similar soils: 80 percent

Additional Components:
Eufaula: 5 percent
Konawa: 5 percent
Slaughterville: 5 percent
Teller: 5 percent

Component Description

Dougherty
Landscape: Dune fields, sandhills, valleys
Landforms: Dunes
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and loamy alluvium and/or sandy eolian deposits

Representative profile location: About 2,375 feet west and 50 feet south of the northeast corner, section 3, T. 17 N., R. 1 E., Payne County, Oklahoma.

Typical Profile

A—0 to 6 inches; moderately acid loamy fine sand
E—6 to 26 inches; moderately acid loamy fine sand
Bt—26 to 42 inches; moderately acid sandy clay loam
BC—42 to 54 inches; moderately acid fine sandy loam
C—54 to 80 inches; slightly acid loamy fine sand

Properties and Qualities

Slope: 3 to 8 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 6.5 inches (Moderate)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4e
Ecological site name: Deep Sand Savannah PE 48-64
Ecological site number: R084AY018OK

EasA—Easpur loam, 0 to 1 percent slopes, occasionally flooded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Easpur and similar soils: 85 percent

Additional Components:
Port: 4 percent
Pulaski: 4 percent
Oscar: 3 percent
Ashport: 2 percent
Gowen: 2 percent

Component Description

Easpur
Landscape: Valleys
Landforms: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Representative profile location: About 2,000 feet east and 1,300 feet north of the southwest corner, section 16, T. 19 N., R. 2 E., Payne County, Oklahoma.

Typical Profile

Ap—0 to 11 inches; neutral loam
Bw—11 to 29 inches; neutral clay loam
C—29 to 41 inches; neutral stratified fine sandy loam to clay loam
2Bwb—41 to 80 inches; neutral silty clay loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.8 inches (High)

Natural drainage class: Well drained
Runoff: Negligible
Flooding frequency: Occasional
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2w
Ecological site name: Loamy Bottomland PE 44-64
Ecological site number: R080AY050OK

FSLE—Foraker-Shidler-Lucien complex, 3 to 12 percent slopes, very rocky

Setting

Major land resource area: MLRA 76—Bluestem Hills
Elevation: 695 to 1,200 feet (213 to 366 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Foraker and similar soils: 50 percent
Shidler and similar soils: 15 percent
Lucien and similar soils: 11 percent

Additional Components:
Grainola: 6 percent
Mulhall: 6 percent
Agra: 5 percent
Rock outcrop: 4 percent
Coyle: 3 percent

Component Description

Foraker
Landscape: Uplands
Landforms: Hillslopes on low hills (fig. 12)
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous clayey residuum weathered from shale

Representative profile location: About 1,500 feet south and 700 feet east of the northwest corner, section 5, T. 19 N., R. 5 E., Payne County, Oklahoma.

Typical Profile

A—0 to 10 inches; slightly acid flaggy silty clay loam
Bt—10 to 19 inches; moderately alkaline silty clay
Btk1—19 to 29 inches; moderately alkaline silty clay
Btk2—29 to 39 inches; moderately alkaline silty clay
Cr—39 to 43 inches; bedrock

Figure 12.—Rangeland on an area of FSLE—Foraker-Shidler-Lucien complex, 3 to 12 percent slopes, very rocky.

Properties and Qualities

Slope: 5 to 12 percent
Percent of area covered by surface fragments: About 10 percent flagstones, less than 1 percent boulders
Depth to first restrictive layer: 20 to 40 inches to paralithic bedrock*Slowest soil permeability to 60 inches, above first cemented restrictive layer:* 0.06 to 0.2 in/hr (Slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 6.0 inches (Moderate)
Natural drainage class: Moderately well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Claypan Prairie (eastern) PE 54-62
Ecological site number: R076XY010OK

Shidler
Landscape: Uplands
Landforms: Hillslopes on low hills (fig. 12)
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from cherty limestone

Representative profile location: About 400 feet south and 1,900 feet east of the northwest corner, section 5, T. 19 N., R. 5 E., Payne County, Oklahoma.

Typical Profile

A—0 to 7 inches; neutral silty clay loam
Bw—7 to 18 inches; slightly acid silty clay loam
R—18 to 22 inches; bedrock

Properties and Qualities

Slope: 1 to 5 percent
Depth to first restrictive layer: 4 to 20 inches to lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.0 to 0.001 in/hr (Almost impermeable)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 3.6 inches (Low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4s
Ecological site name: Very Shallow PE 54-62
Ecological site number: R076XY098OK

Lucien
Landscape: Uplands
Landforms: Hillslopes on low hills (fig. 12)
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone and shale

Representative profile location: About 700 feet south and 1,350 feet east of the northwest corner, section 5, T. 19 N., R. 5 E., Payne County, Oklahoma.

Typical Profile

A—0 to 7 inches; slightly acid fine sandy loam
Bw—7 to 14 inches; slightly acid fine sandy loam
Cr—14 to 18 inches; bedrock

Properties and Qualities

Slope: 3 to 8 percent
Depth to first restrictive layer: 10 to 20 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (Moderately rapid)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 2.2 inches (Very low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4e
Ecological site name: Shallow Prairie PE 44-64
Ecological site number: R080AY083OK

GadA—Gaddy loamy fine sand, 0 to 1 percent slopes, occasionally flooded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Gaddy and similar soils: 90 percent

Additional Components:
Goodnight: 5 percent
Keokuk: 5 percent

Component Description

Gaddy
Landscape: Valleys
Landforms: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous sandy alluvium

Representative profile location: About 1,200 feet north and 200 feet east of the southwest corner, section 31 T. 25 N., R. 4 E., Noble County, Oklahoma.

Typical Profile

A—0 to 6 inches; moderately alkaline loamy fine sand
C—6 to 80 inches; moderately alkaline stratified fine sand to fine sandy loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 6.0 to 20 in/hr (Rapid)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 4.9 inches (Low)
Natural drainage class: Somewhat excessively drained
Runoff: Negligible
Flooding frequency: Occasional
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Sandy Bottomland PE 44-64
Ecological site number: R080AY068OK

GAMD—Grainola-Ashport-Mulhall complex, 0 to 8 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Grainola and similar soils: 26 percent
Ashport and similar soils: 21 percent
Mulhall and similar soils: 20 percent

Additional Components:
Kingfisher: 10 percent
Lucien: 9 percent
Pawhuska: 7 percent
Renfrow: 7 percent

Component Description

Grainola
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope

Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous clayey residuum weathered from shale

Representative profile location: About 500 feet south and 300 feet east of the northwest corner, section 19, T. 20 N., R. 1 W., Noble County, Oklahoma.

Typical Profile

A—0 to 4 inches; slightly alkaline silty clay loam
Bt—4 to 14 inches; moderately alkaline silty clay
Btk—14 to 36 inches; moderately alkaline silty clay
Cr—36 to 40 inches; bedrock

Properties and Qualities

Slope: 5 to 8 percent
Depth to first restrictive layer: 20 to 40 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 5.7 inches (Low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4e
Ecological site name: Claypan Prairie (North) PE 44-64
Ecological site number: R080AY010OK

Ashport
Landscape: Uplands
Landforms: Valley flats on drainageways
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Representative profile location: About 500 feet south and 350 feet east of the northwest corner, section 19, T. 20 N., R. 1 W., Noble County, Oklahoma.

Typical Profile

A—0 to 13 inches; neutral silty clay loam
Bw—13 to 32 inches; neutral silt loam
C—32 to 40 inches; neutral silt loam
Bwb—40 to 46 inches; neutral silty clay loam
2Cd—46 to 65 inches; moderately alkaline silty clay

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: 41 to 79 inches to densic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 9.1 inches (High)
Natural drainage class: Well drained
Runoff: Negligible
Flooding frequency: Frequent
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 5w
Ecological site name: Loamy Bottomland PE 44-64
Ecological site number: R080AY050OK

Mulhall
Landscape: Uplands
Landforms: Hillslopes
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Loamy colluvium over silty residuum weathered from shale

Representative profile location: About 1,600 feet south and 1,100 feet west of the northeast corner, section 13, T. 21 N., R. 1 W., Noble County, Oklahoma.

Typical Profile

A—0 to 10 inches; neutral loam
BA—10 to 14 inches; neutral loam
Bt1—14 to 23 inches; neutral clay loam
Bt2—23 to 33 inches; neutral clay loam
Bt3—33 to 42 inches; neutral clay loam
Bt4—42 to 56 inches; neutral clay loam
BC—56 to 80 inches; neutral clay loam

Properties and Qualities

Slope: 5 to 8 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 9.4 inches (High)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4e
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

GdyA—Gaddy loamy fine sand, 0 to 1 percent slopes, frequently flooded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Gaddy and similar soils: 65 percent

Additional Components:
Tearney: 15 percent
Keokuk: 10 percent
Yahola: 10 percent

Component Description

Gaddy
Landscape: Valleys
Landforms: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous sandy alluvium

Representative profile location: About 1,200 feet west and 150 feet south of the northeast corner, section 32, T. 24 N., R. 3 E., Osage County, Oklahoma.

Typical Profile

A—0 to 16 inches; moderately alkaline loamy fine sand
C—16 to 80 inches; moderately alkaline stratified fine sand to clay loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 6.0 to 20 in/hr (Rapid)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 5.0 inches (Low)
Natural drainage class: Somewhat excessively drained
Runoff: Negligible
Flooding frequency: Frequent
Ponding frequency: None

Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 5w
Ecological site name: Sandy Bottomland PE 44-64
Ecological site number: R080AY068OK

GMLG—Grainola-Masham-Lucien complex, 5 to 40 percent slopes, very bouldery

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Grainola and similar soils: 37 percent
Masham and similar soils: 22 percent
Lucien and similar soils: 21 percent

Additional Components:
Rock outcrop: 9 percent
Mulhall: 6 percent
Ashport: 3 percent
Highview: 2 percent

Component Description

Grainola
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous clayey residuum weathered from shale

Representative profile location: About 450 feet north and 250 feet east and of the southwest corner, section 34, T. 22 N., R. 1 E., Noble County, Oklahoma.

Typical Profile

A—0 to 5 inches; slightly alkaline gravelly loam
Bt—5 to 24 inches; moderately alkaline silty clay
BC—24 to 30 inches; moderately alkaline silty clay
Cr—30 to 34 inches; bedrock

Properties and Qualities

Slope: 5 to 25 percent
Percent of area covered by surface fragments: About 2 percent subangular gravel
Depth to first restrictive layer: 20 to 40 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 4.2 inches (Low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 7e
Ecological site name: Claypan Prairie (North) PE 44-64
Ecological site number: R080AY010OK

Masham
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous clayey residuum weathered from shale

Representative profile location: About 750 feet north and 600 feet east of the southwest corner, section 34, T. 22 N., R. 1 E., Noble County, Oklahoma.

Typical Profile

A—0 to 4 inches; moderately alkaline silty clay loam
Bw—4 to 13 inches; moderately alkaline silty clay
Cr—13 to 17 inches; bedrock

Properties and Qualities

Slope: 20 to 40 percent
Percent of area covered by surface fragments: About 2 percent subangular gravel
Depth to first restrictive layer: 10 to 20 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 2.2 inches (Very low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 7e

Ecological site name: Shallow Clay Prairie PE 44-64
Ecological site number: R080AY080OK

Lucien
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone and shale

Representative profile location: About 750 feet north and 700 feet east of the southwest corner, section 34, T. 22 N., R. 1 E., Noble County, Oklahoma.

Typical Profile

A—0 to 7 inches; slightly acid very fine sandy loam
Bw—7 to 17 inches; slightly acid very fine sandy loam
Cr—17 to 21 inches; bedrock

Properties and Qualities

Slope: 15 to 20 percent
Depth to first restrictive layer: 10 to 20 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (Moderately rapid)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 3.0 inches (Very low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Shallow Prairie PE 44-64
Ecological site number: R080AY083OK

GrLC—Grainola-Lucien complex, 1 to 5 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Grainola and similar soils: 48 percent

Lucien and similar soils: 30 percent

Additional Components:
Kingfisher: 10 percent
Coyle: 5 percent
Piedmont: 4 percent
Huska: 3 percent

Component Description

Grainola
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous clayey residuum weathered from shale

Representative profile location: About 2,425 feet south and 175 feet east of the northwest corner, section 32, T. 20 N., R. 1 E., Noble County, Oklahoma (fig. 13).

Typical Profile

A—0 to 6 inches; slightly alkaline loam
BA—6 to 11 inches; moderately alkaline clay loam
Bt—11 to 18 inches; moderately alkaline clay
Btk1—18 to 33 inches; moderately alkaline clay
Btk2—33 to 39 inches; moderately alkaline silty clay
Cr—39 to 43 inches; bedrock

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: 20 to 40 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 6.4 inches (Moderate)
Natural drainage class: Well drained
Runoff: High
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Claypan Prairie (North) PE 44-64
Ecological site number: R080AY010OK

Lucien
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex

Figure 13.—Profile of Grainola clay loam in an area of GrLE—Grainola-Lucien complex, 5 to 12 percent slopes, rocky.

Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone and shale

Representative profile location: About 2,350 feet south and 200 feet east of the northwest corner, section 32, T. 20 N., R. 1 E., Noble County, Oklahoma.

Typical Profile

A—0 to 7 inches; slightly acid loam
Bw—7 to 18 inches; slightly acid loam
Cr—18 to 22 inches; bedrock

Properties and Qualities

Slope: 1 to 5 percent
Depth to first restrictive layer: 10 to 20 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (Moderately rapid)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 3.3 inches (Low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4s
Ecological site name: Shallow Prairie PE 44-64
Ecological site number: R080AY083OK

GrLE—Grainola-Lucien complex, 5 to 12 percent slopes, rocky

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Grainola and similar soils: 50 percent
Lucien and similar soils: 26 percent

Additional Components:
Masham: 10 percent
Piedmont: 4 percent
Coyle: 3 percent
Mulhall: 3 percent
Kingfisher: 2 percent
Rock outcrop: 2 percent

Component Description

Grainola
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous clayey residuum weathered from shale

Representative profile location: About 1,350 feet west and 75 feet north of the southeast corner, section 33, T. 21 N., R. 1 W., Noble County, Oklahoma.

Typical Profile

A—0 to 8 inches; slightly alkaline clay loam
Bt—8 to 20 inches; moderately alkaline silty clay
BC—20 to 27 inches; moderately alkaline silty clay
Cr—27 to 31 inches; bedrock

Properties and Qualities

Slope: 5 to 12 percent
Depth to first restrictive layer: 20 to 40 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 4.4 inches (Low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Claypan Prairie (North) PE 44-64
Ecological site number: R080AY010OK

Lucien
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone and shale

Representative profile location: About 1,500 feet west and 75 feet north of the southeast corner, section 33, T. 21 N., R. 1 W., Noble County, Oklahoma.

Typical Profile

A—0 to 7 inches; slightly acid loam
Bw—7 to 12 inches; slightly acid loam
Cr—12 to 16 inches; bedrock

Properties and Qualities

Slope: 5 to 12 percent
Depth to first restrictive layer: 10 to 20 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (Moderately rapid)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 2.1 inches (Very low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Shallow Prairie PE 44-64
Ecological site number: R080AY083OK

GRLF—Grainola-Rock outcrop-Lucien complex, 5 to 20 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Grainola and similar soils: 34 percent
Rock outcrop and similar soils: 30 percent
Lucien and similar soils: 24 percent

Additional Components:
Masham: 5 percent
Mulhall: 5 percent
Ashport: 2 percent

Component Description

Grainola
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous clayey residuum weathered from shale

Representative profile location: About 1,350 feet east and 350 feet north of the southwest corner, section 4 T. 22 N., R. 4 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 5 inches; slightly alkaline gravelly loam
Bt—5 to 24 inches; moderately alkaline silty clay
BC—24 to 30 inches; moderately alkaline silty clay
Cr—30 to 40 inches; bedrock

Properties and Qualities

Slope: 5 to 25 percent
Depth to first restrictive layer: 20 to 40 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 4.2 inches (Low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 7e
Ecological site name: Claypan Prairie (North) PE 44-64
Ecological site number: R080AY010OK

Rock outcrop
Landscape: Uplands
Landforms: Hillslopes on low hills
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Dolomite

Properties and Qualities

Slope: 5 to 40 percent
Depth to first restrictive layer: 0 to 3 inches to paralithic bedrock
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 8s

Lucien
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex

Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone and shale

Representative profile location: About 1,250 feet east and 350 feet north of the southwest corner, section 4 T. 22 N., R. 4 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 7 inches; slightly acid very fine sandy loam
Bw—7 to 17 inches; slightly acid very fine sandy loam
Cr—17 to 21 inches; bedrock

Properties and Qualities

Slope: 15 to 20 percent
Depth to first restrictive layer: 10 to 20 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (Moderately rapid)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 3.0 inches (Very low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Shallow Prairie PE 44-64
Ecological site number: R080AY083OK

GSLF—Grainola-Shidler-Lucien complex, 1 to 20 percent slopes, very rocky

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map unit note: The soils in this complex occur in a regular and repeating pattern. They are so intermingled that individual areas of the named soils could not be separated at the reference scale of 1:24,000.
Prime Farmland class: Not prime farmland

Composition

Grainola and similar soils: 44 percent
Shidler and similar soils: 20 percent
Lucien and similar soils: 11 percent

Additional Components:
Rock outcrop: 9 percent
Renfrow: 7 percent
Mulhall: 4 percent
Coyle: 3 percent
Ashport: 2 percent

Component Description

Grainola
Landscape: Uplands (fig. 14)
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous clayey residuum weathered from shale

Representative profile location: About 1,650 feet south and 50 feet east of the northwest corner, section 36, T. 19 N., R. 4 E., Payne County, Oklahoma.

Typical Profile

A—0 to 6 inches; slightly alkaline stony clay loam
Bt—6 to 9 inches; moderately alkaline stony clay loam
BC—9 to 34 inches; moderately alkaline clay
Cr—34 to 40 inches; bedrock

Properties and Qualities

Slope: 5 to 20 percent
Depth to first restrictive layer: 20 to 40 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 4.0 inches (Low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Claypan Prairie (North) PE 44-64
Ecological site number: R080AY010OK

Shidler
Landscape: Uplands (fig. 14)
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Shoulder
Down-slope shape: Convex

Figure 14.—Rangeland (Claypan Prairie, Very Shallow, and Shallow Prairie ecological sites) on an area of GSLF— Grainola-Shidler-Lucien complex, 1 to 20 percent slopes, very rocky.

Across-slope shape: Convex
Parent material: Loamy residuum weathered from cherty limestone

Representative profile location: About 300 feet north and 100 feet west of the southeast corner, section 6, T. 19 N., R. 5 E., Payne County, Oklahoma.

Typical Profile

A—0 to 18 inches; neutral silt loam
R—18 to 22 inches; bedrock

Properties and Qualities

Slope: 1 to 5 percent
Depth to first restrictive layer: 4 to 20 inches to lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.0 to 0.001 in/hr (Almost impermeable)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 3.6 inches (Low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None

Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4s
Ecological site name: Very Shallow PE 54-62
Ecological site number: R076XY098OK

Lucien
Landscape: Uplands (fig. 14)
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone and shale

Representative profile location: About 2,350 feet west and 1,600 feet north of the southeast corner, section 6, T. 17 N., R. 5 E., Payne County, Oklahoma.

Typical Profile

A—0 to 7 inches; slightly acid loam
Bw—7 to 16 inches; slightly acid loam
Cr—16 to 23 inches; bedrock

Properties and Qualities

Slope: 1 to 5 percent
Depth to first restrictive layer: 10 to 20 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (Moderately rapid)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 2.9 inches (Very low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4s
Ecological site name: Shallow Prairie PE 44-64
Ecological site number: R080AY083OK

HaPE—Harrah-Pulaski complex, 0 to 12 percent slopes, very rocky

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 800 to 1,295 feet (244 to 396 meters)

Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map unit note: The soils in this complex occur in a regular and repeating pattern. They are so intermingled that individual areas of the named soils could not be separated at the reference scale of 1:24,000.
Prime Farmland class: Not prime farmland

Composition

Harrah and similar soils: 56 percent
Pulaski and similar soils: 25 percent

Additional Components:
Rock outcrop: 9 percent
Darnell: 7 percent
Stephenville: 3 percent

Component Description

Harrah
Landscape: Low hills, uplands
Landforms: Hillslopes
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy and sandy colluvium derived from sandstone

Representative profile location: About 2,100 feet east and 25 feet north of the southwest corner, section 26, T. 20 N., R. 1 E., Noble County, Oklahoma.

Typical Profile

A—0 to 5 inches; moderately acid fine sandy loam
E—5 to 9 inches; moderately acid fine sandy loam
Bt1—9 to 24 inches; moderately acid sandy clay loam
Bt2—24 to 70 inches; moderately acid sandy clay loam
Bt3—70 to 80 inches; moderately acid fine sandy loam

Properties and Qualities

Slope: 5 to 12 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: No restrictive layer
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 8.2 inches (Moderate)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Sandy Savannah PE 48-64
Ecological site number: R084AY075OK

Pulaski
Landscape: Low hills, uplands
Landforms: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Representative profile location: About 2,200 feet east and 100 feet south of the northwest corner, section 35 T. 20 N., R. 1 E., Noble County, Oklahoma.

Typical Profile

A—0 to 6 inches; slightly acid fine sandy loam
AC—6 to 12 inches; slightly acid fine sandy loam
C—12 to 50 inches; neutral stratified loamy fine sand to loam
Ab—50 to 55 inches; slightly acid fine sandy loam
Cb—55 to 65 inches; neutral stratified loamy fine sand to loam
Cr—65 to 69 inches; bedrock

Properties and Qualities

Slope: 0 to 2 percent
Depth to first restrictive layer: 63 to 80 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (Moderately rapid)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 8.7 inches (Moderate)
Natural drainage class: Well drained
Runoff: Very low
Flooding frequency: Frequent
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 5w
Ecological site name: Loamy Bottomland PE 48-64
Ecological site number: R084AY050OK

HarC—Harrah fine sandy loam, 3 to 5 percent slopes

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Harrah and similar soils: 85 percent

Additional Components:
Darnell: 5 percent
Mulhall: 5 percent
Stephenville: 5 percent

Component Description

Harrah
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy and sandy colluvium derived from sandstone

Representative profile location: About 1,000 feet north and 800 feet east of the southwest corner, section 16, T. 17 N., R. 4 E., Payne County, Oklahoma.

Typical Profile

A—0 to 4 inches; moderately acid fine sandy loam
E—4 to 8 inches; moderately acid fine sandy loam
Bt1—8 to 56 inches; moderately acid sandy clay loam
Bt2—56 to 80 inches; moderately acid sandy clay loam

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 8.2 inches (Moderate)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Sandy Savannah PE 48-64
Ecological site number: R084AY075OK

KekA—Keokuk very fine sandy loam, 0 to 1 percent slopes, rarely flooded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)

Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Keokuk and similar soils: 88 percent

Additional Components:
Ashport: 5 percent
Gaddy: 5 percent
Goodnight: 2 percent

Component Description

Keokuk
Landscape: Valleys
Landforms: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy and sandy alluvium

Representative profile location: About 2,200 feet east and 600 feet south of the northwest corner, section 4, T. 24 N., R. 2 E., Noble County, Oklahoma.

Typical Profile

Ap—0 to 14 inches; neutral very fine sandy loam
A—14 to 21 inches; neutral very fine sandy loam
Bw1—21 to 31 inches; neutral very fine sandy loam
Bw2—31 to 53 inches; neutral very fine sandy loam
BC—53 to 70 inches; neutral silt loam
C—70 to 80 inches; neutral very fine sandy loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 11.1 inches (High)
Natural drainage class: Well drained
Runoff: Negligible
Flooding frequency: Rare
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 1
Ecological site name: Loamy Bottomland PE 44-64
Ecological site number: R080AY050OK

KeoA—Keokuk very fine sandy loam, 0 to 1 percent slopes, occasionally flooded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Keokuk and similar soils: 88 percent

Additional Components:
Ashport: 5 percent
Gaddy: 5 percent
Goodnight: 2 percent

Component Description

Keokuk
Landscape: Valleys
Landforms: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy and sandy alluvium

Representative profile location: About 2,200 feet west and 3,050 feet south of the northeast corner, section 5, T. 24 N., R. 2 E., Noble County, Oklahoma.

Typical Profile

Ap—0 to 6 inches; neutral very fine sandy loam
A—6 to 13 inches; neutral very fine sandy loam
Bw—13 to 27 inches; neutral very fine sandy loam
C—27 to 80 inches; neutral very fine sandy loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 11.3 inches (High)
Natural drainage class: Well drained
Runoff: Negligible
Flooding frequency: Occasional
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2w

Ecological site name: Loamy Bottomland PE 44-64
Ecological site number: R080AY050OK

KoGD4—Konawa-Gullied land complex, 3 to 8 percent slopes

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map unit note: These areas have been cultivated, and are gullied. Uncrossable gullies are common in nearly all delineations. In addition, most of the remaining soil areas are moderately eroded. The upper part of the subsoil has been mixed into the plow layer. The soils and gullies in this complex occur in a regular and repeating pattern. They are so intermingled that individual areas of the soils and gullies could not be separated at the reference scale of 1:24,000.
Prime Farmland class: Not prime farmland

Composition

Konawa and similar soils: 68 percent
Gullied land and similar soils: 18 percent

Additional Components:
Teller: 8 percent
Dougherty: 3 percent
Eufaula: 3 percent

Component Description

Konawa
Landscape: Uplands
Landforms: Paleoterraces
Geomorphic positions, three-dimensional: Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy and sandy alluvium

Representative profile location: About 2,300 feet east and 900 feet north of the southwest corner, section 9, T. 20 N., R. 9 E., Pawnee County, Oklahoma.

Typical Profile

Ap—0 to 5 inches; moderately acid fine sandy loam
Bt1—5 to 18 inches; slightly acid sandy clay loam
Bt2—18 to 31 inches; moderately acid fine sandy loam
BC—31 to 56 inches; moderately acid fine sandy loam
C—56 to 80 inches; moderately acid loamy fine sand

Properties and Qualities

Slope: 3 to 8 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 9.0 inches (High)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Eroded Sandy Savannah PE 48-64
Ecological site number: R084AY876OK

Gullied land
Landscape: Uplands
Landforms: Gullies on hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Loamy and sandy alluvium

Properties and Qualities

Slope: 3 to 8 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: Not specified
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Runoff: Very high
Flooding frequency: Not flooded
Ponding frequency: Not ponded
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 8e

KowB—Konawa fine sandy loam, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Konawa and similar soils: 80 percent

Additional Components:
Dougherty: 10 percent
Slaughterville: 5 percent
Teller: 5 percent

Component Description

Konawa
Landscape: Uplands
Landforms: Paleoterraces
Geomorphic positions, three-dimensional: Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy and sandy alluvium

Representative profile location: About 600 feet west and 900 feet north of the southeast corner, section 7, T. 24 N., R. 4 E., Noble County, Oklahoma.

Typical Profile

A—0 to 8 inches; moderately acid fine sandy loam
E—8 to 14 inches; moderately acid fine sandy loam
Bt1—14 to 24 inches; slightly acid sandy clay loam
Bt2—24 to 44 inches; slightly acid sandy clay loam
BC1—44 to 60 inches; moderately acid fine sandy loam
BC2—60 to 80 inches; moderately acid loamy fine sand

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 8.9 inches (Moderate)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2e
Ecological site name: Sandy Savannah PE 48-64
Ecological site number: R084AY075OK

KowC2—Konawa fine sandy loam, 3 to 5 percent slopes, eroded

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)

Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map unit note: These areas are, or have been cultivated, and are moderately eroded. In most areas, the upper part of the subsoil has been incorporated into the plow layer. In some areas, surface rills and small gullies are common.
Prime Farmland class: Not prime farmland

Composition

Konawa and similar soils: 85 percent

Additional Components:
Teller: 8 percent
Dougherty: 7 percent

Component Description

Konawa
Landscape: Uplands
Landforms: Paleoterraces
Geomorphic positions, three-dimensional: Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy and sandy alluvium

Representative profile location: About 1,500 feet north and 700 feet west of the southeast corner, section 6, T. 20 N., R. 9 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 6 inches; moderately acid loamy fine sand
Bt1—6 to 22 inches; slightly acid sandy clay loam
Bt2—22 to 39 inches; slightly acid sandy clay loam
BC—39 to 58 inches; moderately acid fine sandy loam
C—58 to 80 inches; slightly acid loamy fine sand

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (Moderately rapid)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 8.5 inches (Moderate)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4e
Ecological site name: Eroded Sandy Savannah PE 48-52
Ecological site number: R084AY875OK

KrdA—Kirkland silt loam, 0 to 1 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Kirkland and similar soils: 85 percent

Additional Components:
Bethany: 10 percent
Pawhuska: 5 percent

Component Description

Kirkland
Landscape: Uplands
Landforms: Plains on paleoterraces
Geomorphic positions, three-dimensional: Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium over clayey residuum weathered from calcareous shale

Representative profile location: About 1,800 feet west and 150 feet south of the northeast corner, section 4, T. 24 N., R. 2 W., Noble County, Oklahoma.

Typical Profile

Ap—0 to 9 inches; slightly acid silt loam
Bt—9 to 28 inches; slightly alkaline silty clay
Btk1—28 to 40 inches; moderately alkaline silty clay
Btk2—40 to 53 inches; moderately alkaline silty clay loam
Btk3—53 to 80 inches; moderately alkaline silty clay loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 8.6 inches (Moderate)
Natural drainage class: Well drained
Runoff: High
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2s
Ecological site name: Claypan Prairie (North) PE 44-64
Ecological site number: R080AY010OK

KrdB—Kirkland silt loam, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Kirkland and similar soils: 80 percent

Additional Components:
Bethany: 10 percent
Pawhuska: 5 percent
Renfrow: 5 percent

Component Description

Kirkland
Landscape: Uplands
Landforms: Plains on paleoterraces
Geomorphic positions, three-dimensional: Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey alluvium over clayey residuum weathered from calcareous shale

Representative profile location: About 500 feet west and 1,900 feet south of the northeast corner, section 3, T. 22 N., R. 2 W., Noble County, Oklahoma.

Typical Profile

Ap—0 to 7 inches; slightly acid silt loam
Bt—7 to 14 inches; slightly alkaline silty clay
Btk—14 to 33 inches; slightly alkaline silty clay
BC—33 to 61 inches; moderately alkaline silty clay loam
Cr—61 to 80 inches; bedrock

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: 60 to 99 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 8.3 inches (Moderate)
Natural drainage class: Well drained

Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Claypan Prairie (North) PE 44-64
Ecological site number: R080AY010OK

KrdB2—Kirkland silt loam, 1 to 3 percent slopes, eroded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map unit note: These areas are, or have been cultivated, and are moderately eroded. In most areas, the upper part of the subsoil has been incorporated into the plow layer. In some areas, surface rills and small gullies are common.
Prime Farmland class: Not prime farmland

Composition

Kirkland and similar soils: 80 percent

Additional Components:
Bethany: 10 percent
Pawhuska: 5 percent
Renfrow: 5 percent

Component Description

Kirkland
Landscape: Uplands
Landforms: Plains on paleoterraces
Geomorphic positions, three-dimensional: Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey alluvium over clayey residuum weathered from calcareous shale

Representative profile location: About 1,750 feet west and 200 feet south of the northeast corner, section 2, T. 24 N., R. 2 W., Noble County, Oklahoma.

Typical Profile

Ap—0 to 4 inches; slightly acid silt loam
Bt1—4 to 25 inches; slightly alkaline silty clay
Bt2—25 to 44 inches; moderately alkaline silty clay loam
Bt3—44 to 61 inches; moderately alkaline silty clay loam
Cr—61 to 80 inches; bedrock

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: 60 to 99 inches to paralithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 8.2 inches (Moderate)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Eroded Claypan Prairie (North) PE 44-64
Ecological site number: R080AY810OK

KrPB—Kirkland-Pawhuska complex, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Kirkland and similar soils: 50 percent
Pawhuska and similar soils: 30 percent

Additional Components:
Bethany: 10 percent
Pawhuska: 5 percent
Renfrow: 5 percent

Component Description

Kirkland
Landscape: Uplands
Landforms: Plains on paleoterraces
Geomorphic positions, three-dimensional: Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey alluvium over clayey residuum weathered from calcareous shale

Representative profile location: About 1,600 feet west and 400 feet north of the southeast corner, section 4, T. 22 N., R. 2 W., Noble County, Oklahoma.

Typical Profile

Ap—0 to 8 inches; slightly acid silt loam
Bt1—8 to 21 inches; slightly alkaline silty clay
Btk—21 to 41 inches; moderately alkaline silty clay
Bt2—41 to 64 inches; moderately alkaline silty clay loam

Bt3—64 to 80 inches; moderately alkaline clay loam

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 8.6 inches (Moderate)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Claypan Prairie (North) PE 44-64
Ecological site number: R080AY010OK

Pawhuska
Landscape: Uplands
Landforms: Hillslopes on hills
Geomorphic positions, two-dimensional: Summit
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Saline clayey residuum weathered from sandstone and shale

Representative profile location: About 500 feet west and 1,000 feet north of the southeast corner, section 4, T. 22 N., R. 2 W., Noble County, Oklahoma.

Typical Profile

Ap—0 to 6 inches; neutral silt loam
Btn1—6 to 22 inches; neutral silty clay
Btn2—22 to 43 inches; neutral silty clay
Btn3—43 to 55 inches; neutral silty clay loam
Btn4—55 to 72 inches; neutral silty clay loam
Cr—72 to 80 inches; bedrock

Properties and Qualities

Slope: 0 to 3 percent
Depth to first restrictive layer: 68 to 80 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Saline
Salinity, maximum within 40 inches: Saline
Sodicity, representative within 40 inches: Sodic
Sodicity, maximum within 40 inches: Sodic
Representative total available water capacity to 60 inches: About 7.9 inches (Moderate)
Natural drainage class: Moderately well drained
Runoff: Very high
Flooding frequency: None

Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4s
Land capability irrigated: None specified
Ecological site name: Slickspot PE 44-64
Ecological site number: R080AY091OK
Typical vegetation: Not specified

LawA—Lawrie loam, 0 to 1 percent slopes, rarely flooded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,200 feet (213 to 366 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland (fig. 15)

Composition

Lawrie and similar soils: 85 percent

Additional Components:
Brewer: 8 percent
Dale: 4 percent
Port: 3 percent

Component Description

Lawrie
Landscape: Valleys
Landforms: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Representative profile location: About 550 feet east and 275 feet north of the southwest corner, section 18, T. 20 N., R. 8 W., Pawnee County, Oklahoma.

Typical Profile

Ap—0 to 10 inches; neutral loam
A—10 to 19 inches; neutral loam
BA—19 to 24 inches; neutral loam
Bt1—24 to 44 inches; neutral clay loam
Bt2—44 to 59 inches; slightly acid clay loam
Bt3—59 to 80 inches; slightly acid loam

Properties and Qualities

Slope: 0 to 1 percent
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic

Figure 15.—Pecan trees on LawA—Lawrie loam, 0 to 1 percent slopes, rarely flooded.

Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 12.0 inches (High)
Natural drainage class: Well drained
Runoff: Negligible
Flooding frequency: Rare
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 1
Ecological site name: Loamy Bottomland PE 44-64
Ecological site number: R080AY050OK

LulB—Lula silt loam, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 76—Bluestem Hills
Landscape: Uplands
Elevation: 695 to 1,200 feet (213 to 366 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Lula and similar soils: 90 percent

Additional Components:
Shidler: 5 percent
Wolco: 5 percent

Component Description

Lula
Landforms: Hillslopes on hills
Geomorphic positions, two-dimensional: Shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Silty residuum weathered from limestone

Representative profile location: About 2,550 feet west and 150 feet south of the northeast corner, section 8, T. 21 N., R. 6 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 10 inches; slightly acid silt loam
BA—10 to 18 inches; slightly acid silty clay loam
Bt—18 to 49 inches; slightly acid silty clay loam
R—49 to 50 inches; bedrock

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: 40 to 60 inches to lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.0 to 0.001 in/hr (Almost impermeable)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 9.0 inches (Moderate)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2e
Ecological site name: Loamy Prairie (northeast) PE 62-80
Ecological site number: R112XY059OK

M-W—Miscellaneous water

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 245 to 3,995 feet (76 to 1,219 meters)
Mean annual precipitation: 39 to 48 inches (991 to 1,219 millimeters)

Mean annual air temperature: 58 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 190 to 240 days

Composition

Miscellaneous water and similar soils: 100 percent

Component Description

Miscellaneous water
Definition: This map unit consists of areas of waste water. Examples include sewage lagoons and impoundments for industrial waste water.

Typical Profile

W—0 to 80 inches; water

Interpretive Groups

Land capability nonirrigated: 8

MilB—Milan loam, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Milan and similar soils: 95 percent

Additional Components:
Norge: 5 percent

Component Description

Milan
Landscape: Uplands
Landforms: Hillslopes on paleoterraces
Geomorphic positions, two-dimensional: Shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy alluvium

Representative profile location: About 2,000 feet west and 2,100 feet north of the southeast corner, section 2, T. 21 N., R. 3 E., Noble County, Oklahoma.

Typical Profile

A—0 to 7 inches; slightly acid loam
BA—7 to 12 inches; neutral loam
Bt1—12 to 26 inches; neutral clay loam
Bt2—26 to 45 inches; neutral clay loam
Bt3—45 to 72 inches; neutral sandy clay loam
BC—72 to 80 inches; neutral sandy loam

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.0 inches (High)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2e
Land capability irrigated: 2e
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

MilC—Milan loam, 3 to 5 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Milan and similar soils: 90 percent

Additional Components:
Norge: 5 percent
Wisby: 5 percent

Component Description

Milan
Landscape: Uplands
Landforms: Hillslopes on paleoterraces
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy alluvium

Representative profile location: About 1,650 feet west and 150 feet south of the northeast corner, section 10, T. 21 N., R. 3 E., Noble County, Oklahoma.

Typical Profile

A—0 to 9 inches; slightly acid loam

BA—9 to 15 inches; neutral loam
Bt1—15 to 33 inches; neutral sandy clay loam
Bt2—33 to 48 inches; neutral clay loam
BC—48 to 62 inches; neutral sandy loam
C—62 to 80 inches; neutral loamy sand

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 9.5 inches (High)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

MinB—Minco very fine sandy loam, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Minco and similar soils: 85 percent

Additional Components:
Vanoss: 10 percent
Slaughterville: 5 percent

Component Description

Minco
Landscape: Valleys
Landforms: Stream terraces
Geomorphic positions, three-dimensional: Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy alluvium and/or eolian deposits

Representative profile location: About 3,700 feet east and 1,350 feet south of the northwest corner, section 29, T. 24 N., R. 3 E., Noble County, Oklahoma.

Typical Profile

Ap—0 to 8 inches; slightly acid very fine sandy loam
A—8 to 15 inches; neutral very fine sandy loam
Bw1—15 to 32 inches; neutral very fine sandy loam
Bw2—32 to 46 inches; neutral very fine sandy loam
BC—46 to 62 inches; neutral very fine sandy loam
C—62 to 80 inches; neutral very fine sandy loam

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 11.4 inches (High)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2e
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

MirA—Miller silty clay loam, 0 to 1 percent slopes, occasionally flooded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Miller and similar soils: 85 percent

Additional Components:
Ashport: 10 percent
Port: 5 percent

Component Description

Miller
Landscape: Valleys

Landforms: Backswamps on flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous clayey alluvium

Representative profile location: About 1,800 feet west and 400 feet south of the northeast corner, section 13, T. 21 N., R. 3 E., Noble County, Oklahoma.

Typical Profile

Ap—0 to 10 inches; moderately alkaline silty clay loam
Bw—10 to 30 inches; moderately alkaline silty clay
Ab—30 to 44 inches; moderately alkaline silty clay loam
Bwb—44 to 80 inches; moderately alkaline clay loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.0 inches (High)
Natural drainage class: Moderately well drained
Runoff: High
Flooding frequency: Occasional
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2w
Ecological site name: Clayey Bottomland PE 44-64
Ecological site number: R080AY045OK

MPNC2—Milan-Pawhuska-Norge complex, 3 to 5 percent slopes, eroded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map unit note: The soils in this complex occur in a regular and repeating pattern. They are so intermingled that individual areas of the named soils could not be separated at the reference scale of 1:24,000. These areas are, or have been cultivated, and are moderately eroded. In most areas, the upper part of the subsoil has been incorporated into the plow layer. In some areas, surface rills and small gullies are common.
Prime Farmland class: Not prime farmland

Composition

Milan and similar soils: 35 percent
Pawhuska and similar soils: 28 percent
Norge and similar soils: 24 percent

Additional Components:
Huska: 9 percent
Kirkland: 4 percent

Component Description

Milan
Landscape: Uplands
Landforms: Hillslopes on paleoterraces
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy alluvium

Representative profile location: About 2,300 feet east and 750 feet north of the southwest corner, section 18, T. 21 N., R. 3 E., Noble County, Oklahoma.

Typical Profile

Ap—0 to 11 inches; slightly acid loam
Bt1—11 to 16 inches; neutral clay loam
Bt2—16 to 28 inches; neutral clay loam
Bt3—28 to 57 inches; neutral clay loam
BC1—57 to 65 inches; neutral coarse sandy loam
BC2—65 to 75 inches; neutral loamy coarse sand

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.1 inches (High)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Eroded Loamy Prairie PE 44-64
Ecological site number: R080AY856OK

Pawhuska
Landscape: Uplands
Landforms: Hillslopes on hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex

Across-slope shape: Convex
Parent material: Saline clayey residuum weathered from sandstone and shale

Representative profile location: About 2,000 feet east and 800 feet north of the southwest corner, section 18, T. 21 N., R. 3 E., Noble County, Oklahoma.

Typical Profile

Ap—0 to 8 inches; neutral silt loam
Btn1—8 to 17 inches; neutral clay
Btn2—17 to 27 inches; neutral clay
Btn3—27 to 40 inches; neutral clay loam
Btn4—40 to 64 inches; neutral clay loam
BC—64 to 80 inches; slightly alkaline coarse sandy loam

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Saline
Salinity, maximum within 40 inches: Saline
Sodicity, representative within 40 inches: Sodic
Sodicity, maximum within 40 inches: Sodic
Representative total available water capacity to 60 inches: About 8.0 inches (Moderate)
Natural drainage class: Moderately well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4s
Ecological site name: Eroded Slickspot PE 44-64
Ecological site number: R080AY891OK

Norge
Landscape: Uplands
Landforms: Paleoterraces
Geomorphic positions, three-dimensional: Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy alluvium

Representative profile location: About 200 feet south and 1,800 feet east of the northwest corner, section 19, T. 21 N., R. 3 E., Noble County, Oklahoma.

Typical Profile

Ap—0 to 6 inches; slightly acid silt loam
BA—6 to 14 inches; slightly acid silt loam
Bt1—14 to 35 inches; neutral silty clay loam
Bt2—35 to 45 inches; neutral silty clay loam
Bt3—45 to 80 inches; neutral silty clay loam

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 11.5 inches (High)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Eroded Loamy Prairie PE 44-64
Ecological site number: R080AY856OK

MuGD4—Mulhall-Gullied land complex, 3 to 8 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map unit note: All of these areas have been cultivated, and erosion has caused non-crossable gullies 4 to 8 feet deep, 30 to 50 feet wide, and 50 to 300 feet apart. The gullied area makes up about 5 percent of the unit. About 50 percent of the remaining area is moderately eroded.
Prime Farmland class: Not prime farmland

Composition

Mulhall and similar soils: 77 percent
Gullied land and similar soils: 15 percent

Additional Components:
Zaneis: 5 percent
Pawhuska: 3 percent

Component Description

Mulhall
Landscape: Uplands
Landforms: Hillslopes on low hills (fig. 16)
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Loamy colluvium over silty residuum weathered from shale

Representative profile location: About 1,100 feet west and 25 feet north of the southeast corner, section 30, T. 21 N., R. 2 E., Noble County, Oklahoma.

Figure 16.—Reseeded native grasses on a formerly cultivated area of MuGD4—Mulhall-Gullied land complex, 3 to 8 percent slopes.

Typical Profile

A—0 to 6 inches; neutral loam
BA—6 to 10 inches; neutral loam
Bt1—10 to 31 inches; neutral clay loam

Bt2—31 to 41 inches; neutral clay loam
Bt3—41 to 65 inches; slightly alkaline clay loam
2Cr—65 to 80 inches; bedrock

Properties and Qualities

Slope: 5 to 8 percent
Depth to first restrictive layer: 60 to 80 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 9.3 inches (High)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Eroded Loamy Prairie PE 44-64
Ecological site number: R080AY856OK

Gullied land
Landscape: Uplands
Landforms: Gullies on hillslopes on low hills (fig. 16)
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Loamy colluvium over silty residuum weathered from shale

Properties and Qualities

Slope: 3 to 8 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 6.0 to 20 in/hr (Rapid)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Natural drainage class: Excessively drained
Runoff: High
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 8e

MulC—Mulhall loam, 3 to 5 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Mulhall and similar soils: 75 percent

Additional Components:
Renfrow: 8 percent
Zaneis: 7 percent
Grainola: 4 percent
Coyle: 3 percent
Huska: 3 percent

Component Description

Mulhall
Landscape: Uplands
Landforms: Hillslopes on low hills (fig. 17)
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Loamy colluvium over silty residuum weathered from shale

Representative profile location: About 200 feet north and 1,600 feet west of the southeast corner of sec. 17, T. 18 N., R. 2 E., Payne County, Oklahoma.

Typical Profile

A—0 to 13 inches; neutral loam
BA—13 to 17 inches; neutral loam
Bt1—17 to 31 inches; neutral clay loam
Bt2—31 to 41 inches; neutral clay loam
Bt3—41 to 74 inches; slightly alkaline clay loam
2Cr—74 to 80 inches; bedrock

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: 60 to 80 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)

Figure 17.—Rangeland (Loamy Prairie ecological site) on an area of MulC—Mulhall loam, 3 to 5 percent slopes.

Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 9.5 inches (High)
Natural drainage class: Well drained
Runoff: Low *Flooding frequency:* None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

MulC2—Mulhall loam, 3 to 5 percent slopes, eroded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map unit note: These areas are, or have been cultivated, and are moderately eroded. In most areas, the upper part of the subsoil has been incorporated into the plow layer. In some areas, surface rills and small gullies are common.
Prime Farmland class: Not prime farmland

Composition

Mulhall and similar soils: 75 percent

Additional Components:
Renfrow: 5 percent
Chickasha: 4 percent
Coyle: 4 percent
Grainola: 4 percent
Huska: 4 percent
Zaneis: 4 percent

Component Description

Mulhall
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Loamy colluvium over silty residuum weathered from shale

Representative profile location: About 1,000 feet north and 200 feet east of the southwest corner, section 26, T. 20 N., R. 4 E., Payne County, Oklahoma.

Typical Profile

A—0 to 6 inches; neutral loam
BA—6 to 10 inches; neutral loam

Bt1—10 to 31 inches; neutral clay loam
Bt2—31 to 58 inches; neutral clay loam
Bt3—58 to 70 inches; slightly alkaline clay loam
2Cr—70 to 80 inches; bedrock

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: 60 to 80 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 9.3 inches (High)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Eroded Loamy Prairie PE 44-64
Ecological site number: R080AY856OK

MulD—Mulhall loam, 5 to 8 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Mulhall and similar soils: 92 percent

Additional Components:
Zaneis: 5 percent
Pawhuska: 3 percent

Component Description

Mulhall
Landscape: Low hills
Landforms: Hillslopes
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Loamy colluvium over silty residuum weathered from shale

Representative profile location: About 2,400 feet west and 50 feet north of the southeast corner, section 26, T. 20 N., R. 1 E., Noble County, Oklahoma.

Typical Profile

A—0 to 10 inches; neutral loam
BA—10 to 14 inches; neutral loam
Bt1—14 to 23 inches; neutral clay loam
Bt2—23 to 33 inches; neutral clay loam
Bt3—33 to 42 inches; neutral clay loam
Bt4—42 to 56 inches; neutral clay loam
BC—56 to 80 inches; neutral clay loam

Properties and Qualities

Slope: 5 to 8 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 9.4 inches (High)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4e
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

NBRE—Niotaze-Bigheart-Rock outcrop complex, 3 to 15 percent slopes, extremely stony

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 695 to 1,200 feet (213 to 366 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map unit note: The soils and rock outcrop in this complex occur in a regular and repeating pattern. They are so intermingled that individual areas of the named soils could not be separated at the reference scale of 1:24,000.
Prime Farmland class: Not prime farmland

Composition

Niotaze and similar soils: 50 percent
Bigheart and similar soils: 23 percent
Rock outcrop and similar soils: 20 percent

Additional Components:
Talihina: 5 percent
Bartlesville: 2 percent

Component Description

Niotaze
Landscape: Uplands (fig. 18 and fig. 19)
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy colluvium derived from sandstone over clayey residuum weathered from shale

Representative profile location: About 900 feet south and 1,100 feet west of the northeast corner, section 26, T. 20 N., R. 11 E., Osage County, Oklahoma.

Typical Profile

A—0 to 3 inches; moderately acid very stony fine sandy loam
E—3 to 10 inches; moderately acid very stony fine sandy loam
2Bt—10 to 18 inches; moderately acid silty clay
2BCt—18 to 28 inches; moderately acid silty clay
2Cd—28 to 39 inches; moderately acid silty clay
2Cr—39 to 43 inches; bedrock

Figure 18.—Landscape of StLE—Steedman-Lucien complex, 5 to 12 percent slopes, very rocky in foreground and NBRE—Niotaze-Bigheart-Rock outcrop complex, 3 to 15 percent slopes, extremely stony in background.

Figure 19.—Detail of vegetation (Sandy Savannah ecological site) on NBRE—Niotaze-Bigheart-Rock outcrop complex, 3 to 15 percent slopes, extremely stony.

Properties and Qualities

Slope: 3 to 15 percent
Percent of area covered by surface fragments: About 5 percent boulders, about 10 percent stones

Depth to first restrictive layer: 20 to 40 inches to densic bedrock
Paralithic bedrock: 31 to 79 inches
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 4.0 inches (Low)
Natural drainage class: Somewhat poorly drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Sandy Savannah PE 48-64
Ecological site number: R084AY075OK

Bigheart
Landscape: Uplands (fig. 19)
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex

Parent material: Residuum weathered from sandstoneRepresentative profile location: About 1,100 feet south and 1,400 feet west of the northeast corner, section 26, T. 20 N., R. 11 E., Osage County, Oklahoma.

Typical Profile

A—0 to 5 inches; strongly acid fine sandy loam
Bw1—5 to 11 inches; strongly acid fine sandy loam
Bw2—11 to 15 inches; moderately acid fine sandy loam
R—15 to 39 inches; bedrock

Properties and Qualities

Slope: 3 to 8 percent
Percent of area covered by surface fragments: About 10 percent stones, about 5 percent boulders
Depth to first restrictive layer: 10 to 20 inches to lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 2.1 inches (Very low)
Natural drainage class: Well drained
Runoff: High

Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4e
Ecological site name: Shallow Savannah PE 48-64
Ecological site number: R084AY088OK

Rock outcrop
Landscape: Uplands (fig. 19)
Landforms: Drainageways
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandstone

Properties and Qualities

Slope: 3 to 15 percent
Percent of area covered by surface fragments: About 10 percent stones, about 5 percent boulders
Depth to first restrictive layer: 0 to 2 inches to lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: Not specified
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.0 to 0.001 in/hr (Almost impermeable)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 0.0 inches (Very low)
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 8s
Ecological site name: Not specified
Ecological site number: Not specified

NBRF—Niotaze-Bigheart-Rock outcrop complex, 15 to 25 percent slopes, rubbly

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 695 to 1,200 feet (213 to 366 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map unit note: The soils and rock outcrop in this complex occur in a regular and repeating pattern. They are so intermingled that individual areas of the named soils could not be separated at the reference scale of 1:24,000.

Prime Farmland class: Not prime farmland

Composition

Niotaze and similar soils: 47 percent
Bigheart and similar soils: 24 percent
Rock outcrop and similar soils: 18 percent

Additional Components:
Bartlesville: 11 percent

Component Description

Niotaze
Landscape: Uplands (fig. 20)
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy colluvium derived from sandstone over clayey residuum weathered from shale

Representative profile location: About 2,000 feet east and 500 feet south of the northwest corner, section 2, T. 20 N., R. 11 E., Osage County, Oklahoma (fig. 21).

Figure 20.—Detail of surface stones in an area of NBRF—Niotaze-Bigheart-Rock outcrop complex, 15 to 25 percent slopes, rubbly.

Figure 21.—Profile of Niotaze very stony fine sandy loam in an area of NBRF—Niotaze-Bigheart-Rock outcrop complex, 15 to 25 percent slopes, rubbly.

Typical Profile

A—0 to 3 inches; moderately acid very stony fine sandy loam
E—3 to 10 inches; moderately acid very stony fine sandy loam
2Bt—10 to 18 inches; moderately acid silty clay
2BCt—18 to 28 inches; moderately acid silty clay

2Cd—28 to 39 inches; moderately acid silty clay
2Cr—39 to 43 inches; bedrock

Properties and Qualities

Slope: 15 to 25 percent
Percent of area covered by surface fragments: About 15 percent stones, about 3 percent boulders
Depth to first restrictive layer: 20 to 40 inches to densic bedrock; 31 to 79 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 4.0 inches (Low)
Natural drainage class: Somewhat poorly drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Present within 80 inches

Interpretive Groups

Land capability nonirrigated: 7e
Ecological site name: Sandy Savannah PE 48-64
Ecological site number: R084AY075OK

Bigheart
Landscape: Uplands (fig. 20)
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Representative profile location: About 1,700 feet east and 1,000 feet south of the northwest corner, section 2, T. 20 N., R. 11 E., Osage County, Oklahoma.

Typical Profile

A—0 to 5 inches; strongly acid fine sandy loam
Bw1—5 to 11 inches; strongly acid fine sandy loam
Bw2—11 to 15 inches; moderately acid fine sandy loam
R—15 to 39 inches; bedrock

Properties and Qualities

Slope: 3 to 12 percent
Percent of area covered by surface fragments: About 15 percent stones, about 3 percent boulders
Depth to first restrictive layer: 10 to 20 inches to lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)

Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 2.1 inches (Very low)
Natural drainage class: Well drained
Runoff: High
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Shallow Savannah PE 48-64
Ecological site number: R084AY088OK

Rock outcrop
Landscape: Uplands (fig. 20)
Landforms: Drainageways
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandstone

Properties and Qualities

Slope: 15 to 25 percent
Percent of area covered by surface fragments: About 15 percent stones, about 3 percent boulders
Depth to first restrictive layer: 0 to 2 inches to lithic bedrock
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.0 to 0.001 in/hr (Almost impermeable)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 0.0 inches (Very low)
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 8s

NBRG—Niotaze-Bigheart-Rock outcrop complex, 25 to 45 percent slopes, rubbly

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days

Map unit note: The soils and rock outcrop in this complex occur in a regular and repeating pattern. They are so intermingled that individual areas of the named soils could not be separated at the reference scale of 1:24,000.
Prime Farmland class: Not prime farmland

Composition

Niotaze and similar soils: 53 percent
Bigheart and similar soils: 27 percent
Rock outcrop and similar soils: 20 percent

Component Description

Niotaze
Landscape: Uplands (fig. 22)
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy colluvium derived from sandstone over clayey residuum weathered from shale

Representative profile location: About 1,500 feet north and 800 feet west of the southeast corner, section 15, T. 25 N., R. 12 E., Osage County, Oklahoma.

Figure 22.—Vegetation (Savannah Breaks ecological site) and boulders in an area of NBRG—Niotaze-Bigheart-Rock outcrop complex, 25 to 45 percent slopes, rubbly.

Typical Profile

A—0 to 3 inches; moderately acid very bouldery fine sandy loam
E—3 to 10 inches; moderately acid very bouldery fine sandy loam
2Bt—10 to 18 inches; moderately acid silty clay
2BCt—18 to 28 inches; moderately acid silty clay
2Cd—28 to 39 inches; moderately acid silty clay
2Cr—39 to 43 inches; bedrock

Properties and Qualities

Slope: 25 to 45 percent
Percent of area covered by surface fragments: About 30 percent boulders, about 10 percent stones
Depth to first restrictive layer: 20 to 40 inches to densic bedrock; 31 to 79 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 4.0 inches (Low)
Natural drainage class: Somewhat poorly drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Present within 80 inches

Interpretive Groups

Land capability nonirrigated: 7e
Ecological site name: Savannah Breaks PE 48-64
Ecological site number: R084AY079OK

Bigheart
Landscape: Uplands (fig. 22)
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Representative profile location: About 1,300 feet north and 900 feet west of the southeast corner, section 15, T. 25 N., R. 12 E., Osage County, Oklahoma.

Typical Profile

A—0 to 5 inches; strongly acid fine sandy loam
Bw1—5 to 11 inches; strongly acid fine sandy loam
Bw2—11 to 15 inches; moderately acid fine sandy loam
R—15 to 39 inches; bedrock

Properties and Qualities

Slope: 5 to 12 percent
Percent of area covered by surface fragments: About 30 percent boulders, about 10 percent stones

Depth to first restrictive layer: 10 to 20 inches to lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 2.1 inches (Very low)
Natural drainage class: Well drained
Runoff: High
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Shallow Savannah PE 48-64
Ecological site number: R084AY088OK

Rock outcrop
Landscape: Uplands (fig. 22 and fig. 23)
Landforms: Drainageways

Figure 23.—Rock outcrop on the shoulder of the hillslope on NBRG—Niotaze-Bigheart-Rock outcrop complex, 25 to 45 percent slopes, rubbly.

Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandstone

Properties and Qualities

Slope: 25 to 45 percent
Percent of area covered by surface fragments: About 30 percent boulders, about 10 percent stones
Depth to first restrictive layer: 0 to 2 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: Not specified
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.0 to 0.001 in/hr (Almost impermeable)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 0.0 inches (Very low)
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 8s
Ecological site name: Not specified
Ecological site number: Not specified

NogB—Norge loam, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Norge and similar soils: 80 percent

Additional Components:
Agra: 5 percent
Bethany: 5 percent
Renfrow: 5 percent
Teller: 5 percent

Component Description

Norge
Landscape: Uplands
Landforms: Paleoterraces
Geomorphic positions, three-dimensional: Tread
Down-slope shape: Convex

Across-slope shape: Linear
Parent material: Loamy alluvium

Representative profile location: About 1,300 feet west and 500 feet south of the northeast corner, section 17, T. 17 N., R. 2 E., Payne County, Oklahoma.

Typical Profile

A—0 to 10 inches; slightly acid loam
BA—10 to 14 inches; slightly acid silty clay loam
Bt1—14 to 24 inches; slightly acid silty clay loam
Bt2—24 to 42 inches; neutral silty clay loam
Bt3—42 to 64 inches; neutral clay loam
C—64 to 80 inches; neutral clay loam

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 11.6 inches (High)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2e
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

NogC—Norge loam, 3 to 5 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Norge and similar soils: 80 percent

Additional Components:
Agra: 4 percent
Mulhall: 4 percent
Renfrow: 4 percent
Teller: 4 percent
Zaneis: 4 percent

Component Description

Norge
Landscape: Uplands
Landforms: Paleoterraces
Geomorphic positions, three-dimensional: Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy alluvium

Representative profile location: About 800 feet north and 800 feet west of the southeast corner, section 16, T. 17 N., R. 2 E., Payne County, Oklahoma.

Typical Profile

A—0 to 9 inches; slightly acid loam
BA—9 to 14 inches; slightly acid silt loam
Bt1—14 to 36 inches; slightly acid silty clay loam
Bt2—36 to 66 inches; neutral silty clay loam
Bt3—66 to 80 inches; neutral clay loam

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 11.8 inches (High)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

NogC2—Norge loam, 3 to 5 percent slopes, eroded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map unit note: These areas are, or have been cultivated, and are moderately eroded. In most areas, the upper part of the subsoil has been incorporated into the plow layer. In some areas, surface rills and small gullies are common.
Prime Farmland class: Not prime farmland

Composition

Norge and similar soils: 80 percent

Additional Components:
Agra: 4 percent
Mulhall: 4 percent
Renfrow: 4 percent
Teller: 4 percent
Zaneis: 4 percent

Component Description

Norge
Landscape: Uplands
Landforms: Paleoterraces
Geomorphic positions, three-dimensional: Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy alluvium

Representative profile location: 1,200 feet north and 100 feet east of the southwest corner, section 17, T. 18 N., R. 5 E., Payne County, Oklahoma.

Typical Profile

Ap—0 to 10 inches; slightly acid loam
BA—10 to 13 inches; slightly acid silty clay loam
Bt1—13 to 66 inches; neutral silty clay loam
Bt2—66 to 80 inches; neutral silty clay loam

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 11.5 inches (High)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Eroded Loamy Prairie PE 44-64
Ecological site number: R080AY856OK

NorB—Norge silt loam, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies

Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Norge and similar soils: 85 percent

Additional Components:
Bethany: 5 percent
Milan: 5 percent
Pawhuska: 5 percent

Component Description

Norge
Landscape: Uplands
Landforms: Paleoterraces
Geomorphic positions, three-dimensional: Tread
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy alluvium

Representative profile location: About 1,300 feet west and 50 feet north of the southeast corner, section 34, T. 21 N., R. 1 E., Noble County, Oklahoma.

Typical Profile

Ap—0 to 9 inches; slightly acid silt loam
A—9 to 15 inches; slightly acid silt loam
BA—15 to 19 inches; slightly acid silty clay loam
Bt1—19 to 30 inches; neutral silty clay loam
Bt2—30 to 44 inches; neutral silty clay loam
Bt3—44 to 67 inches; neutral silty clay loam
BC—67 to 80 inches; neutral silt loam

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 11.6 inches (High)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2e
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

NorC—Norge silt loam, 3 to 5 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Norge and similar soils: 90 percent

Additional Components:
Milan: 5 percent
Pawhuska: 5 percent

Component Description

Norge
Landscape: Uplands
Landforms: Paleoterraces
Geomorphic positions, three-dimensional: Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy alluvium

Representative profile location: About 470 feet south and 50 feet east of the northwest corner, section 33, T. 21 N., R. 1 W., Noble County, Oklahoma.

Typical Profile

A—0 to 11 inches; slightly acid silt loam
BA—11 to 16 inches; slightly acid silt loam
Bt1—16 to 27 inches; neutral clay loam
Bt2—27 to 47 inches; neutral clay loam
Bt3—47 to 60 inches; neutral clay loam
Bt4—60 to 80 inches; neutral silt loam

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 11.6 inches (High)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

NorC2—Norge silt loam, 3 to 5 percent slopes, eroded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map unit note: These areas are, or have been cultivated, and are moderately eroded. In most areas, the upper part of the subsoil has been incorporated into the plow layer. In some areas, surface rills and small gullies are common.
Prime Farmland class: Not prime farmland

Composition

Norge and similar soils: 90 percent

Additional Components:
Milan: 5 percent
Pawhuska: 5 percent

Component Description

Norge
Landscape: Uplands
Landforms: Paleoterraces
Geomorphic positions, three-dimensional: Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy alluvium

Representative profile location: About 1,950 feet west and 1,050 feet south of the northeast corner, section 11, T. 23 N., R. 1 E., Noble County, Oklahoma.

Typical Profile

Ap—0 to 9 inches; slightly acid silt loam
Bt1—9 to 18 inches; neutral silty clay loam
Bt2—18 to 30 inches; neutral silty clay loam
Bt3—30 to 44 inches; neutral silty clay loam
Bt4—44 to 64 inches; neutral silty clay loam
BC—64 to 80 inches; neutral silt loam

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 11.5 inches (High)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Eroded Loamy Prairie PE 44-64
Ecological site number: R080AY856OK

NviA—Navina loam, 0 to 1 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Navina and similar soils: 85 percent

Additional Components:
Bethany: 5 percent
Norge: 5 percent
Teller: 5 percent

Component Description

Navina
Landscape: Uplands
Landforms: Plains on paleoterraces
Geomorphic positions, three-dimensional: Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Representative profile location: About 1,200 feet east and 300 feet north of the southwest corner, section 27, T. 18 N., R. 1 E., Payne County, Oklahoma.

Typical Profile

Ap—0 to 10 inches; neutral loam
BA—10 to 14 inches; neutral loam
Bt1—14 to 24 inches; neutral loam
Bt2—24 to 40 inches; neutral sandy clay loam
BC—40 to 60 inches; neutral fine sandy loam
C—60 to 80 inches; neutral loamy fine sand

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.3 inches (High)
Natural drainage class: Well drained
Runoff: Negligible
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 1
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

PawB—Pawhuska silt loam, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,495 feet (213 to 457 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Pawhuska and similar soils: 86 percent

Additional Components:
Norge: 5 percent
Renfrow: 5 percent
Zaneis: 4 percent

Component Description

Pawhuska
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Saline clayey residuum weathered from sandstone and shale

Representative profile location: About 2,150 feet west and 600 feet south of the northeast corner, section 31, T. 22 N., R. 3 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 8 inches; neutral silt loam
Btn—8 to 56 inches; neutral silty clay
BC—56 to 70 inches; neutral silty clay loam
Cr—70 to 80 inches; bedrock

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: 60 to 87 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Saline
Salinity, maximum within 40 inches: Saline
Sodicity, representative within 40 inches: Sodic
Sodicity, maximum within 40 inches: Sodic
Representative total available water capacity to 60 inches: About 8.0 inches (Moderate)
Natural drainage class: Moderately well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4s
Ecological site name: Slickspot PE 44-64
Ecological site number: R080AY091OK

PIT—Pit, quarry

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 495 to 2,195 feet (152 to 670 meters)
Mean annual precipitation: 22 to 48 inches (559 to 1,219 millimeters)
Mean annual air temperature: 57 to 64 degrees F (14 to 18 degrees C)
Frost-free period: 190 to 240 days
Prime Farmland class: Not prime farmland

Composition

Pits and similar soils: 100 percent

Component Description

Pits
Parent material: Mine spoil or earthy fill

Typical Profile

C—0 to 60 inches; variable

Properties and Qualities

Slope: 0 to 4 percent
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Runoff: High
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 8

PoOA—Port-Oscar complex, 0 to 1 percent slopes, occasionally flooded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Port and similar soils: 58 percent
Oscar and similar soils: 40 percent

Additional Components:
Miller: 2 percent

Component Description

Port
Landscape: Valleys
Landforms: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous loamy alluvium

Representative profile location: About 2,350 feet west and 100 feet north of the southeast corner, section 36, T. 21 N., R. 2 E., Noble County, Oklahoma.

Typical Profile

A1—0 to 16 inches; neutral silt loam
A2—16 to 23 inches; neutral silt loam
Bw1—23 to 40 inches; neutral silt loam
Bw2—40 to 51 inches; neutral silt loam
Ab—51 to 80 inches; neutral silt loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 12.0 inches (Very high)
Natural drainage class: Well drained
Runoff: Negligible
Flooding frequency: Occasional
Ponding frequency: None

Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2w
Ecological site name: Loamy Bottomland PE 44-64
Ecological site number: R080AY050OK

Oscar
Landscape: Valleys
Landforms: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Saline loamy alluvium

Representative profile location: About 2,300 feet west and 100 feet north of the southeast corner, section 36, T. 21 N., R. 2 E., Noble County, Oklahoma.

Typical Profile

A1—0 to 4 inches; neutral silt loam
A2—4 to 10 inches; neutral silt loam
Btn—10 to 16 inches; slightly alkaline silty clay loam
BC—16 to 33 inches; neutral silt loam
Ab1—33 to 43 inches; neutral silt loam
Ab2—43 to 80 inches; neutral silt loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Saline
Salinity, maximum within 40 inches: Saline
Sodicity, representative within 40 inches: Sodic
Sodicity, maximum within 40 inches: Sodic
Representative total available water capacity to 60 inches: About 11.3 inches (High)
Natural drainage class: Moderately well drained
Runoff: Medium
Flooding frequency: Occasional
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6s
Ecological site name: Alkali Bottomland PE 44-64
Ecological site number: R080AY001OK

PorA—Port silt loam, 0 to 1 percent slopes, occasionally flooded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)

Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Port and similar soils: 93 percent

Additional Components:
Easpur: 5 percent
Oscar: 2 percent

Component Description

Port
Landscape: Valleys
Landforms: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous loamy alluvium

Representative profile location: About 1,700 feet east and 100 feet north of the southwest corner, Section 27, T. 22 N., R. 1 W., Noble County, Oklahoma.

Typical Profile

Ap—0 to 8 inches; neutral silt loam
Ad—8 to 14 inches; neutral silt loam
A1—14 to 20 inches; neutral silt loam
A2—20 to 31 inches; neutral silt loam
Bw—31 to 40 inches; neutral silt loam
Bk1—40 to 48 inches; neutral silt loam
Bk2—48 to 55 inches; neutral silty clay loam
Ab—55 to 68 inches; neutral silty clay loam
Bwb1—68 to 74 inches; neutral silty clay loam
Bwb2—74 to 85 inches; neutral silty clay loam
Bwb3—85 to 93 inches; neutral silty clay loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 12.0 inches (Very high)
Natural drainage class: Well drained
Runoff: Negligible
Flooding frequency: Occasional
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2w
Ecological site name: Loamy Bottomland PE 44-64
Ecological site number: R080AY050OK

PotA—Port silty clay loam, 0 to 1 percent slopes, occasionally flooded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Port and similar soils: 87 percent

Additional Components:
Lela: 5 percent
Miller: 5 percent
Oscar: 3 percent

Component Description

Port
Landscape: Valleys
Landforms: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous loamy alluvium

Representative profile location: About 1,050 feet north and 100 feet east of the southwest corner, section 16, T. 23 N., R. 1 W., Noble County, Oklahoma.

Typical Profile

A—0 to 10 inches; neutral silty clay loam
Bw1—10 to 26 inches; neutral silty clay loam
Bw2—26 to 35 inches; neutral silty clay loam
Bw3—35 to 66 inches; neutral silty clay loam
BC—66 to 80 inches; neutral silty clay loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 12.0 inches (Very high)
Natural drainage class: Well drained
Runoff: Negligible
Flooding frequency: Occasional
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2w
Ecological site name: Loamy Bottomland PE 44-64
Ecological site number: R080AY050OK

PrGC4—Prue-Gullied land complex, 3 to 5 percent slopes

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map Unit note: These areas have been cultivated, and are gullied. Uncrossable gullies are common in nearly all delineations. In addition, most of the remaining soil areas are moderately eroded. The upper part of the subsoil has been mixed into the plow layer. The soils and gullies in this complex occur in a regular and repeating pattern. They are so intermingled that individual areas of the soils and gullies could not be separated at the reference scale of 1:24,000.
Prime Farmland class: Not prime farmland

Composition

Prue and similar soils: 65 percent
Gullied land and similar soils: 20 percent

Additional Components:
Agra: 5 percent
Bartlesville: 5 percent
Steedman: 5 percent

Component Description

Prue
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Footslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy colluvium derived from sandstone and shale

Representative profile location: About 500 feet east and 1,200 feet north of the southwest corner, section 11, T. 20 N., R. 7 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 6 inches; moderately acid loam
BA—6 to 12 inches; moderately acid loam
Bt—12 to 58 inches; moderately acid clay loam
2BC—58 to 80 inches; neutral silty clay

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)

Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.3 inches (High)
Natural drainage class: Somewhat poorly drained
Runoff: High
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Eroded Loamy Prairie PE 62-80
Ecological site number: R112XY856OK

Gullied land
Landscape: Uplands
Landforms: Gullies on hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Linear
Across-slope shape: Concave

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: Not specified
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Runoff: Very high
Flooding frequency: Not flooded
Ponding frequency: Not ponded
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 8

PruB—Prue loam, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Prue and similar soils: 82 percent

Additional Components:
Agra: 7 percent
Steedman: 5 percent
Bartlesville: 3 percent
Lucien: 3 percent

Component Description

Prue
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Footslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy colluvium derived from sandstone and shale

Representative profile location: About 1,600 feet north and 1,100 feet east of the southwest corner, section 28, T. 21 N., R. 8 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 11 inches; moderately acid loam
BA—11 to 17 inches; moderately acid loam
Bt—17 to 48 inches; moderately acid clay loam
2BC—48 to 75 inches; neutral silty clay
2Cr—75 to 80 inches; bedrock

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: 72 to 99 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.4 inches (High)
Natural drainage class: Somewhat poorly drained
Runoff: Low
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Loamy Prairie (northeast) PE 62-80
Ecological site number: R112XY059OK

PruC—Prue loam, 3 to 5 percent slopes

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days

Prime Farmland class: All areas are prime farmland

Composition

Prue and similar soils: 82 percent

Additional Components:
Agra: 7 percent
Steedman: 5 percent
Bartlesville: 3 percent
Lucien: 3 percent

Component Description

Prue
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Footslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy colluvium derived from sandstone and shale

Representative profile location: About 1,600 feet east and 250 feet north of the southwest corner, section 22, T. 20 N., R. 8 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 9 inches; moderately acid loam
BA—9 to 13 inches; moderately acid loam
Bt—13 to 47 inches; moderately acid clay loam
2BC—47 to 59 inches; neutral silty clay
2Cr—59 to 80 inches; bedrock

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: 51 to 99 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.3 inches (High)
Natural drainage class: Somewhat poorly drained
Runoff: Low
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Loamy Prairie (northeast) PE 62-80
Ecological site number: R112XY059OK

PruC2—Prue loam, 3 to 5 percent slopes, eroded

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map Unit note: These areas are, or have been cultivated, and are moderately eroded. In most areas, the upper part of the subsoil has been incorporated into the plow layer. In some areas, surface rills and small gullies are common.
Prime Farmland class: Not prime farmland

Composition

Prue and similar soils: 82 percent

Additional Components:
Agra: 7 percent
Steedman: 5 percent
Bartlesville: 3 percent
Lucien: 3 percent

Component Description

Prue
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Footslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy colluvium derived from sandstone and shale

Representative profile location: About 400 feet west and 2,100 feet north of the southeast corner, section 33, T. 21 N., R. 8 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 7 inches; moderately acid loam
BA—7 to 10 inches; moderately acid loam
Bt—10 to 65 inches; moderately acid clay loam
2BC—65 to 80 inches; neutral silty clay
2Cr—73 to 80 inches; bedrock

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: 51 to 99 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: No restrictive layer
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.3 inches (High)

Natural drainage class: Somewhat poorly drained
Runoff: Low
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Eroded Loamy Prairie PE 62-80
Ecological site number: R112XY856OK

PulA—Pulaski fine sandy loam, 0 to 1 percent slopes, occasionally flooded

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Pulaski and similar soils: 82 percent

Additional Components:
Easpur: 10 percent
Ashport: 5 percent
Port: 3 percent

Component Description

Pulaski
Landscape: Valleys
Landforms: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Representative profile location: About 3,050 feet south and 2,800 feet east of the northwest corner, section 11, T. 21 N., R. 3 E., Noble County, Oklahoma.

Typical Profile

A—0 to 9 inches; slightly acid fine sandy loam
C1—9 to 27 inches; slightly acid fine sandy loam
C2—27 to 80 inches; neutral stratified loamy fine sand to loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (Moderately rapid)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 8.9 inches (Moderate)
Natural drainage class: Well drained
Runoff: Negligible
Flooding frequency: Occasional
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2e
Ecological site name: Loamy Bottomland PE 48-64
Ecological site number: R084AY050OK

RefC2—Renfrow loam, 3 to 5 percent slopes, eroded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map Unit note: These areas are, or have been cultivated, and are moderately eroded. In most areas, the upper part of the subsoil has been incorporated into the plow layer. In some areas, surface rills and small gullies are common.
Prime Farmland class: Not prime farmland

Composition

Renfrow and similar soils: 75 percent

Additional Components:
Huska: 5 percent
Kirkland: 5 percent
Mulhall: 5 percent
Zaneis: 5 percent
Grainola: 3 percent
Coyle: 2 percent

Component Description

Renfrow
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey residuum weathered from shale

Representative profile location: About 2,500 feet south and 900 feet west of the northeast corner, section 24, T. 20 N., R. 2 E., Payne County, Oklahoma.

Typical Profile

Ap—0 to 6 inches; neutral loam
Bt1—6 to 35 inches; neutral silty clay
Bt2—35 to 80 inches; neutral silty clay

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.4 inches (High)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Eroded Claypan Prairie (North) PE 44-64
Ecological site number: R080AY810OK

RenB—Renfrow silt loam, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Renfrow and similar soils: 82 percent

Additional Components:
Grainola: 10 percent
Pawhuska: 5 percent
Bethany: 3 percent

Component Description

Renfrow
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Shoulder
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey residuum weathered from shale

Representative profile location: About 1,500 feet west and 2,600 feet south of the northeast corner, section 19, T. 21 N., R. 1 W., Noble County, Oklahoma.

Typical Profile

Ap—0 to 9 inches; neutral silt loam
BA—9 to 13 inches; neutral silty clay loam
Bt1—13 to 23 inches; neutral silty clay loam
Bt2—23 to 42 inches; neutral silty clay
Bt3—42 to 60 inches; neutral silty clay
BC—60 to 80 inches; moderately alkaline silty clay

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.6 inches (High)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2e
Ecological site name: Claypan Prairie (North) PE 44-64
Ecological site number: R080AY010OK

RenC—Renfrow silt loam, 3 to 5 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Renfrow and similar soils: 85 percent

Additional Components:
Grainola: 12 percent
Pawhuska: 3 percent

Component Description

Renfrow
Landscape: Uplands
Landforms: Hillslopes on low hills (fig. 24)
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Linear

Figure 24.—Winter wheat on an area of RenC—Renfrow silt loam, 3 to 5 percent slopes.

Parent material: Clayey residuum weathered from shale

Representative profile location: About 1,400 feet east and 150 feet south of the northwest corner, section 30, T. 21 N., R. 1 W., Noble County, Oklahoma.

Typical Profile

Ap—0 to 10 inches; neutral silt loam
BA—10 to 13 inches; neutral silty clay loam
Bt1—13 to 28 inches; neutral silty clay
Bt2—28 to 36 inches; neutral silty clay
Bt3—36 to 50 inches; neutral silty clay
BC1—50 to 65 inches; moderately alkaline silty clay
BC2—65 to 80 inches; moderately alkaline silty clay

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.6 inches (High)
Natural drainage class: Well drained
Runoff: Very high

Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Claypan Prairie (North) PE 44-64
Ecological site number: R080AY010OK

RenC2—Renfrow silt loam, 3 to 5 percent slopes, eroded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map Unit note: These areas are, or have been cultivated, and are moderately eroded. In most areas, the upper part of the subsoil has been incorporated into the plow layer. In some areas, surface rills and small gullies are common.
Prime Farmland class: Not prime farmland

Composition

Renfrow and similar soils: 75 percent

Additional Components:
Grainola: 9 percent
Mulhall: 4 percent
Norge: 4 percent
Pawhuska: 3 percent
Zaneis: 3 percent
Kirkland: 2 percent

Component Description

Renfrow
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey residuum weathered from shale

Representative profile location: About 1,900 feet west and 850 feet north of the southeast corner, section 8, T. 20 N., R. 1 W., Pawnee County, Oklahoma.

Typical Profile

Ap—0 to 6 inches; neutral silt loam
BA—6 to 11 inches; neutral silty clay loam
Bt1—11 to 26 inches; neutral silty clay
Bt2—26 to 46 inches; neutral silty clay
BCk—46 to 71 inches; neutral silty clay

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.5 inches (High)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Eroded Claypan Prairie (North) PE 44-64
Ecological site number: R080AY810OK

RGPD3—Renfrow, Grainola, and Pawhuska soils, 3 to 8 percent slopes, severely eroded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map Unit note: These areas have been cultivated, and are severely eroded. The upper part of the subsoil has been mixed into the plow layer, and surface rills and small gullies are common. Uncrossable gullies are common in some delineations. The pattern of soils in this undifferentiated unit is variable from one area to another. Most areas are made up of all three soils, but some areas may be only Renfrow soil.
Prime Farmland class: Not prime farmland

Composition

Renfrow and similar soils: 45 percent
Grainola and similar soils: 29 percent
Pawhuska and similar soils: 15 percent

Additional Components:
Mulhall: 6 percent
Huska: 5 percent

Component Description

Renfrow
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex

Across-slope shape: Linear
Parent material: Clayey residuum weathered from shale

Representative profile location: About 900 feet north and 600 feet east of the southwest corner, section 5, T. 20 N., R. 1 E., Noble County, Oklahoma.

Typical Profile

Ap—0 to 6 inches; neutral clay loam
Bt1—6 to 24 inches; neutral silty clay
Bt2—24 to 44 inches; neutral silty clay loam
Bt3—44 to 80 inches; neutral silty clay loam

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.3 inches (High)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Eroded Claypan Prairie (North) PE 44-64
Ecological site number: R080AY810OK

Grainola
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous clayey residuum weathered from shale

Representative profile location: About 600 feet north and 300 feet east of the southwest corner, section 5, T. 20 N., R. 1 E., Noble County, Oklahoma.

Typical Profile

Ap—0 to 5 inches; slightly alkaline silty clay loam
Bt—5 to 21 inches; moderately alkaline silty clay
Cr—21 to 25 inches; bedrock

Properties and Qualities

Slope: 3 to 8 percent
Depth to first restrictive layer: 20 to 40 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)

Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 3.5 inches (Low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Eroded Claypan Prairie (North) PE 44-64
Ecological site number: R080AY810OK

Pawhuska
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Saline clayey residuum weathered from sandstone and shale

Representative profile location: About 800 feet north and 600 feet east of the southwest corner, section 5, T. 20 N., R. 1 E., Noble County, Oklahoma.

Typical Profile

Ap—0 to 3 inches; neutral silt loam
Btn1—3 to 13 inches; neutral silty clay
Btn2—13 to 42 inches; neutral silty clay loam
Btn3—42 to 80 inches; neutral silty clay loam

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Saline
Salinity, maximum within 40 inches: Saline
Sodicity, representative within 40 inches: Sodic
Sodicity, maximum within 40 inches: Sodic
Representative total available water capacity to 60 inches: About 7.9 inches (Moderate)
Natural drainage class: Moderately well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Eroded Slickspot PE 44-64
Ecological site number: R080AY891OK

SemB—Seminole loam, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Seminole and similar soils: 80 percent

Additional Components:
Agra: 8 percent
Chickasha: 8 percent
Huska: 4 percent

Component Description

Seminole
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Saline clayey residuum weathered from shale

Representative profile location: About 900 feet west and 100 feet north of the southeast corner, section 4, T. 17 N., R. 6 E., Payne County, Oklahoma.

Typical Profile

Ap—0 to 12 inches; slightly acid loam
BA—12 to 15 inches; slightly acid loam
Bt1—15 to 24 inches; neutral clay
Bt2—24 to 32 inches; neutral clay loam
BC—32 to 80 inches; neutral clay loam

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Sodic
Representative total available water capacity to 60 inches: About 8.0 inches (Moderate)
Natural drainage class: Moderately well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4s
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

SemC2—Seminole loam, 3 to 5 percent slopes, eroded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map Unit note: These areas are, or have been cultivated, and are moderately eroded. In most areas, the upper part of the subsoil has been incorporated into the plow layer. In some areas, surface rills and small gullies are common.
Prime Farmland class: Not prime farmland

Composition

Seminole and similar soils: 80 percent

Additional Components:
Agra: 8 percent
Chickasha: 8 percent
Huska: 4 percent

Component Description

Seminole
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Saline clayey residuum weathered from shale

Representative profile location: About 2,500 feet north and 150 feet west of the southeast corner, section 15, T. 17 N., R. 6 E., Payne County, Oklahoma.

Typical Profile

Ap—0 to 4 inches; slightly acid loam
Bt1—4 to 32 inches; neutral clay
Bt2—32 to 45 inches; neutral clay loam
BC—45 to 80 inches; neutral clay

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Sodic
Representative total available water capacity to 60 inches: About 7.9 inches (Moderate)
Natural drainage class: Moderately well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4s
Ecological site name: Eroded Loamy Prairie PE 44-64
Ecological site number: R080AY856OK

SFRB—Shidler-Foraker-Rock outcrop complex, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 76—Bluestem Hills
Elevation: 695 to 1,200 feet (213 to 366 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map Unit note: The soils and rock outcrop in this complex occur in a regular and repeating pattern. They are so intermingled that individual areas of the named soils could not be separated at the reference scale of 1:24,000.
Prime Farmland class: Not prime farmland

Composition

Shidler and similar soils: 45 percent
Foraker and similar soils: 35 percent
Rock outcrop and similar soils: 15 percent

Additional Components:
Agra: 5 percent

Component Description

Shidler
Landscape: Uplands (fig. 25)
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Summit, shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from cherty limestone

Representative profile location: About 1,850 feet north and 1,850 feet east of the southwest corner, section 23, T. 20 N., R. 5 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 8 inches; neutral silty clay loam
R—8 to 12 inches; bedrock

Figure 25.—Rangeland (Very Shallow and Claypan Prairie ecological sites) in an area of SFRB—Shidler-Foraker-Rock outcrop complex, 1 to 3 percent slopes.

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: 4 to 20 inches to lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.0 to 0.001 in/hr (Almost impermeable)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 1.6 inches (Very low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 7s
Ecological site name: Very Shallow PE 54-62
Ecological site number: R076XY098OK

Foraker
Landscape: Uplands

Landforms: Hillslopes on low hills (fig. 25)
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous clayey residuum weathered from shale

Representative profile location: About 1,250 feet north and 950 feet east of the southwest corner, section 23, T. 20 N., R. 5 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 8 inches; moderately alkaline gravelly silty clay loam
BA—8 to 11 inches; moderately alkaline silty clay loam
Bt—11 to 26 inches; moderately alkaline silty clay
Bk—26 to 38 inches; moderately alkaline silty clay
Cr—38 to 48 inches; bedrock

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: 20 to 40 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 5.4 inches (Low)
Natural drainage class: Moderately well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3s
Ecological site name: Claypan Prairie (Eastern) PE 54-62
Ecological site number: R076XY010OK

Rock outcrop
Landscape: Uplands
Landforms: Hillslopes on low hills (fig. 25)
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Dolomite

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: 0 to 3 inches to paralithic bedrock
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic

Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 8e

SlaG—Slaughterville fine sandy loam, 8 to 45 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Slaughterville and similar soils: 78 percent

Additional Components:
Minco: 10 percent
Konawa: 7 percent
Derby: 5 percent

Component Description

Slaughterville
Landscape: Dune fields, sandhills, valleys
Landforms: Dunes
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy and/or sandy eolian deposits

Representative profile location: About 450 feet east and 1,550 feet south of the northwest corner, section 23, T. 24 N., R. 3 E., Noble County, Oklahoma.

Typical Profile

A—0 to 16 inches; slightly acid fine sandy loam
Bw—16 to 33 inches; neutral fine sandy loam
C—33 to 80 inches; slightly alkaline loamy fine sand

Properties and Qualities

Slope: 8 to 45 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (Moderately rapid)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 7.3 inches (Moderate)

Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 7e
Ecological site name: Sandy Prairie PE 44-64
Ecological site number: R080AY073OK

StDD—Stephenville-Darnell complex, 3 to 8 percent slopes, rocky

Setting

Major land resource area: MLRA 84A—North Cross Timbers
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map Unit note: The soils in this complex occur in a regular and repeating pattern. They are so intermingled that individual areas of the named soils could not be separated at the reference scale of 1:24,000.
Prime Farmland class: All areas are prime farmland

Composition

Stephenville and similar soils: 45 percent
Darnell and similar soils: 40 percent

Additional Components:
Harrah: 6 percent
Grainola: 5 percent
Rock outcrop: 4 percent

Component Description

Stephenville
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone

Representative profile location: About 1,600 feet east and 1,100 feet south of the northwest corner, section 34, T. 20 N., R. 1 E., Noble County, Oklahoma.

Typical Profile

A—0 to 5 inches; moderately acid fine sandy loam
E—5 to 9 inches; moderately acid fine sandy loam
Bt—9 to 30 inches; strongly acid sandy clay loam
BC—30 to 36 inches; strongly acid fine sandy loam
Cr—36 to 40 inches; bedrock

Properties and Qualities

Slope: 3 to 8 percent
Depth to first restrictive layer: 20 to 40 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 5.6 inches (Low)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4e
Ecological site name: Sandy Savannah PE 48-64
Ecological site number: R084AY075OK

Darnell
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone

Representative profile location: About 1,300 feet east and 1,400 feet south of the northwest corner, section 34, T. 20 N., R. 1 E., Noble County, Oklahoma.

Typical Profile

A—0 to 4 inches; slightly acid fine sandy loam
Bw—4 to 12 inches; slightly acid fine sandy loam
Cr—12 to 16 inches; bedrock

Properties and Qualities

Slope: 3 to 8 percent
Depth to first restrictive layer: 10 to 20 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (Moderately rapid)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 1.6 inches (Very low)
Natural drainage class: Well drained

Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4e
Ecological site name: Shallow Savannah PE 48-64
Ecological site number: R084AY088OK

StLC—Steedman-Lucien complex, 1 to 5 percent slopes, very rocky

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,200 feet (213 to 366 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map Unit note: The soils in this complex occur in a regular and repeating pattern. They are so intermingled that individual areas of the named soils could not be separated at the reference scale of 1:24,000.
Prime Farmland class: All areas are prime farmland

Composition

Steedman and similar soils: 72 percent
Lucien and similar soils: 18 percent

Additional Components:
Coyle: 8 percent
Rock outcrop: 2 percent

Component Description

Steedman
Landscape: Uplands (fig. 26)
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Summit, shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from sandstone and shale

Representative profile location: About 1,450 feet south and 1,750 feet east of the northwest corner, section 34, T. 22 N., R. 6 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 6 inches; slightly acid loam
Bt—6 to 17 inches; neutral silty clay
Btss—17 to 37 inches; neutral silty clay
Cr—37 to 47 inches; bedrock

Properties and Qualities

Slope: 1 to 5 percent
Percent of area covered by surface fragments: About 1 percent subrounded cobbles
Depth to first restrictive layer: 20 to 40 inches to paralithic bedrock

Figure 26.—Rangeland (Loamy Prairie and Shallow Prairie ecological sites) and surface stones in an area of StLC—Steedman-Lucien complex, 1 to 5 percent slopes, very rocky.

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 5.4 inches (Low)
Natural drainage class: Moderately well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

Lucien
Landscape: Uplands
Landforms: Hillslopes on low hills (fig. 26)
Down-slope shape: Convex
Across-slope shape: Convex

Parent material: Loamy residuum weathered from sandstone and shale

Representative profile location: About 1,200 feet south and 2,250 feet east of the northwest corner, section 34, T. 22 N., R. 6 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 6 inches; slightly acid loam
Bw—6 to 12 inches; slightly acid loam
Cr—12 to 16 inches; bedrock

Properties and Qualities

Slope: 1 to 5 percent
Depth to first restrictive layer: 10 to 20 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (Moderately rapid)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 2.1 inches (Very low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4s
Ecological site name: Shallow Prairie PE 44-64
Ecological site number: R080AY083OK

StLE—Steedman-Lucien complex, 5 to 12 percent slopes, very rocky

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map Unit note: The soils in this complex occur in a regular and repeating pattern. They are so intermingled that individual areas of the named soils could not be separated at the reference scale of 1:24,000.
Prime Farmland class: Not prime farmland

Composition

Steedman and similar soils: 75 percent
Lucien and similar soils: 16 percent

Additional Components:
Coyle: 5 percent
Rock outcrop: 4 percent

Component Description

Steedman
Landscape: Uplands (fig. 18)
Landforms: Hillslopes on low hills (fig. 27)
Geomorphic positions, two-dimensional: Summit, shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from sandstone and shale

Representative profile location: About 2,500 feet east and 300 feet north of the southwest corner, section 11, T. 20 N., R .8 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 7 inches; moderately acid cobbly loam
Bt—7 to 15 inches; neutral silty clay
Btss—15 to 36 inches; neutral silty clay
Cr—36 to 40 inches; bedrock

Properties and Qualities

Slope: 3 to 12 percent
Percent of area covered by surface fragments: About 2 percent subrounded cobbles
Depth to first restrictive layer: 20 to 40 inches to paralithic bedrock

Figure 27.—Rangeland (Loamy Prairie and Shallow Prairie ecological sites) in an area of StLE—Steedman-Lucien complex, 5 to 12 percent slopes, very rocky. Brush has regrown following brush control.

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 5.9 inches (Low)
Natural drainage class: Moderately well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6s
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

Lucien
Landscape: Uplands
Landforms: Hillslopes on low hills (fig. 27)
Geomorphic positions, two-dimensional: Shoulder, backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone and shale

Representative profile location: About 1,500 feet north and 1,000 feet east of the southwest corner, section 11, T. 20 N., R. 8 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 5 inches; slightly acid loam
Bw—5 to 13 inches; slightly acid loam
Cr—13 to 20 inches; bedrock

Properties and Qualities

Slope: 3 to 12 percent
Depth to first restrictive layer: 10 to 20 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (Moderately rapid)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 2.3 inches (Very low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site name: Shallow Prairie PE 44-64
Ecological site number: R080AY083OK

StLG—Steedman-Lucien complex, 12 to 45 percent slopes, very rocky

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map Unit note: The soils in this complex occur in a regular and repeating pattern. They are so intermingled that individual areas of the named soils could not be separated at the reference scale of 1:24,000.
Prime Farmland class: Not prime farmland

Composition

Steedman and similar soils: 70 percent
Lucien and similar soils: 15 percent

Additional Components:
Prue: 8 percent
Rock outcrop: 7 percent

Component Description

Steedman
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Summit, shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from sandstone and shale

Representative profile location: About 350 feet east and 4,150 feet north of the southwest corner, section 35, T. 21 N., R. 8 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 6 inches; moderately acid cobbly loam
Bt—6 to 13 inches; neutral silty clay loam
Btss—13 to 32 inches; neutral silty clay
Cr—32 to 40 inches; bedrock

Properties and Qualities

Slope: 12 to 45 percent
Percent of area covered by surface fragments: About 5 percent subrounded stones, about 4 percent subrounded boulders, and about 7 percent subrounded cobbles
Depth to first restrictive layer: 20 to 40 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 5.5 inches (Low)
Natural drainage class: Moderately well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Present within 80 inches

Interpretive Groups

Land capability nonirrigated: 7e
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

Lucien
Landscape: Uplands
Landforms: Hillslopes on low hills
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone and shale

Representative profile location: About 300 feet east and 4,200 feet north of the southwest corner, section 35, T. 21 N., R. 8 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 7 inches; slightly acid cobbly loam
Bw—7 to 11 inches; slightly acid cobbly loam
Cr—11 to 15 inches; bedrock

Properties and Qualities

Slope: 12 to 25 percent
Percent of area covered by surface fragments: About 10 percent subrounded stones, about 5 percent subrounded boulders
Depth to first restrictive layer: 10 to 20 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (Moderately rapid)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 2.0 inches (Very low)
Natural drainage class: Well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 7e
Ecological site name: Shallow Prairie PE 44-64
Ecological site number: R080AY083OK

TeaA—Tearney silty clay, 0 to 1 percent slopes, ponded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Tearney and similar soils: 85 percent

Additional Components:
Ashport: 8 percent
Keokuk: 7 percent

Component Description

Tearney
Landscape: Dune fields, valleys
Landforms: Interdunes, flood plains
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Clayey alluvium over sandy alluvium

Representative profile location: About 3,800 feet west and 2,300 feet south of the northeast corner, section 5, T. 24 N., R. 2 E., Noble County, Oklahoma.

Typical Profile

A—0 to 10 inches; moderately alkaline silty clay
Bw—10 to 26 inches; moderately alkaline silty clay loam
2C1—26 to 30 inches; moderately alkaline loamy fine sand
2C2—30 to 80 inches; moderately alkaline sand

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 6.6 inches (Moderate)
Natural drainage class: Well drained
Runoff: Negligible

Flooding frequency: Occasional
Ponding frequency: Occasional
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4w
Ecological site name: Meadow PE 44-64
Ecological site number: R080AY090OK

TelB—Teller loam, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Teller and similar soils: 85 percent

Additional Components:
Norge: 7 percent
Konawa: 6 percent
Pawhuska: 2 percent

Component Description

Teller
Landscape: Valleys
Landforms: Paleoterraces
Geomorphic positions, three-dimensional: Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Representative profile location: About 2,000 feet south and 500 feet west of the northeast corner, section 12, T. 24 N., R. 3 E., Noble County, Oklahoma.

Typical Profile

A—0 to 8 inches; slightly acid loam
BA—8 to 12 inches; slightly acid loam
Bt1—12 to 20 inches; slightly acid clay loam
Bt2—20 to 30 inches; slightly acid clay loam
Bt3—30 to 50 inches; slightly acid clay loam
BC—50 to 80 inches; neutral loam

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.6 inches (High)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2e
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

TelC—Teller loam, 3 to 5 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Teller and similar soils: 85 percent

Additional Components:
Norge: 8 percent
Minco: 5 percent
Konawa: 2 percent

Component Description

Teller
Landscape: Valleys
Landforms: Paleoterraces
Geomorphic positions, three-dimensional: Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Representative profile location: About 1,800 feet east and 2,450 feet south of the northwest corner, section 18, T. 17 N., R. 2 E., Payne County, Oklahoma.

Typical Profile

Ap—0 to 10 inches; slightly acid loam
BA—10 to 15 inches; neutral loam
Bt—15 to 43 inches; slightly acid sandy clay loam
C—43 to 80 inches; neutral loam

Properties and Qualities

Slope: 3 to 5 percent
Depth to first restrictive layer: Not present

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.5 inches (High)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

TelC2—Teller loam, 3 to 5 percent slopes, eroded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map Unit note: These areas are, or have been cultivated, and are moderately eroded. In most areas, the upper part of the subsoil has been incorporated into the plow layer. In some areas, surface rills and small gullies are common.
Prime Farmland class: Not prime farmland

Composition

Teller and similar soils: 80 percent

Additional Components:
Konawa: 8 percent
Norge: 8 percent
Slaughterville: 4 percent

Component Description

Teller
Landscape: Valleys
Landforms: Paleoterraces
Geomorphic positions, three-dimensional: Riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Representative profile location: About 1,000 feet west and 2,000 feet south of the northeast corner, section 18, T. 20 N., R. 10 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 6 inches; slightly acid loam
BA—6 to 14 inches; slightly acid loam

Bt—14 to 43 inches; slightly acid clay loam
BC—43 to 80 inches; slightly acid loam

Properties and Qualities

Slope: 3 to 8 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.6 inches (High)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 4e
Ecological site name: Eroded Loamy Prairie PE 44-64
Ecological site number: R080AY856OK

URB—Urban Land

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 895 to 1,200 feet (274 to 366 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 60 to 61 degrees F (16 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Urban Land and similar soils: 100 percent

Component Description

Urban Land
Definition: Urban Land is mostly residential, businesses, paved roads, streets, and parking areas.
Parent material: Mine spoil or earthy fill derived from sandstone and shale

Representative profile location: About 50 feet east and 2,100 feet south of the northwest corner of Sec. 8, T. 16 N., R. 2 W. in Logan County, Oklahoma.

Typical Profile

C—0 to 60 inches; variable

Properties and Qualities

Slope: 1 to 5 percent
Depth to first restrictive layer: Not present

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 0.0 inches (Very low)
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 8

VanA—Vanoss silt loam, 0 to 1 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Vanoss and similar soils: 82 percent

Additional Components:
Bethany: 5 percent
Minco: 5 percent
Teller: 5 percent
Waurika: 3 percent

Component Description

Vanoss
Landscape: Valleys
Landforms: Paleoterraces
Geomorphic positions, three-dimensional: Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Representative profile location: About 200 feet east and 1,350 feet south of the northwest corner, section 29, T. 24 N., R. 3 E., Noble County, Oklahoma.

Typical Profile

A—0 to 10 inches; slightly acid silt loam
BA—10 to 15 inches; slightly acid silt loam
Bt1—15 to 30 inches; slightly acid silty clay loam
Bt2—30 to 42 inches; slightly acid silty clay loam
Bt3—42 to 52 inches; slightly acid silty clay loam
BC—52 to 80 inches; neutral silty clay loam

Properties and Qualities

Slope: 0 to 1 percent
Depth to first restrictive layer: Not present
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (Moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 11.6 inches (High)
Natural drainage class: Well drained
Runoff: Negligible
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 1
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

W—Water

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 695 to 1,295 feet (213 to 396 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: Not prime farmland

Composition

Water and similar soils: 100 percent

Component Description

Water
Landscape: This map unit consists of areas of fresh water, including ponds, lakes, and rivers.
Landforms: Valleys

Representative profile location: At Perry Lake, About 2,000 feet north and 1,000 feet west of the southeast corner, section 31, T. 21 N., R. 1 W., Noble County, Oklahoma.

Typical Profile

W—0 to 80 inches; water

Properties and Qualities

Depth to first restrictive layer: Not present
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic

Flooding frequency: Not flooded
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 8w

WolB—Wolco silty clay loam, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 76—Bluestem Hills
Elevation: 695 to 1,200 feet (213 to 366 meters)
Mean annual precipitation: 33 to 40 inches (838 to 1,016 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Wolco and similar soils: 75 percent

Additional Components:
Apperson: 10 percent
Lula: 10 percent
Dwight: 5 percent

Component Description

Wolco
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone and shale

Representative profile location: About 1,800 feet north and 30 feet west of the southeast corner, section 13, T. 28 N., R. 6 E., Osage County, Oklahoma.

Typical Profile

A—0 to 14 inches; slightly acid silty clay loam
BA—14 to 21 inches; slightly acid silty clay loam
Bt—21 to 55 inches; neutral silty clay
R—55 to 59 inches; bedrock

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: 40 to 60 inches to lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 10.3 inches (High)
Natural drainage class: Moderately well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2e
Ecological site name: Loamy Prairie (northeast) PE 62-80
Ecological site number: R112XY059OK

ZaHC—Zaneis-Huska complex, 1 to 5 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map Unit note: The soils in this complex occur in a regular and repeating pattern. They are so intermingled that individual areas of the named soils could not be separated at the reference scale of 1:24,000.
Prime Farmland class: All areas are prime farmland

Composition

Zaneis and similar soils: 54 percent
Huska and similar soils: 32 percent

Additional Components:
Coyle: 14 percent

Component Description

Zaneis
Landscape: Uplands (fig. 28)
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone and shale

Representative profile location: About 1,700 feet west and 2,300 feet north of the southeast corner, section 36, T. 21 N., R. 3 E.

Typical Profile

A—0 to 7 inches; slightly acid loam
BA—7 to 10 inches; slightly acid loam
Bt1—10 to 28 inches; slightly acid clay loam
Bt2—28 to 38 inches; slightly acid clay loam
BC—38 to 46 inches; neutral clay loam
Cr—46 to 50 inches; bedrock

Properties and Qualities

Slope: 1 to 5 percent
Depth to first restrictive layer: 40 to 60 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 7.5 inches (Moderate)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

Huska
Landscape: Uplands (fig. 28)
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Saline clayey residuum weathered from sandstone and shale

Representative profile location: About 2,100 feet west and 2,500 feet north of the southeast corner, section 36, T. 21 N., R. 3 E., Noble County, Oklahoma.

Typical Profile

A—0 to 8 inches; neutral loam
Btn1—8 to 20 inches; slightly alkaline clay
Btnz—20 to 42 inches; moderately alkaline clay loam
Btn2—42 to 54 inches; moderately alkaline clay loam
Cr—54 to 60 inches; bedrock

Properties and Qualities

Slope: 1 to 5 percent
Depth to first restrictive layer: 40 to 60 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Saline
Sodicity, representative within 40 inches: Sodic
Sodicity, maximum within 40 inches: Sodic
Representative total available water capacity to 60 inches: About 4.9 inches (Low)
Natural drainage class: Moderately well drained

Figure 28.—Native grass hay meadow (Loamy Prairie and Slickspot ecological sites) in an area of ZaHC—Zaneis-Huska complex, 1 to 5 percent slopes. The lighter colored patches of threeawn are the Huska portion.

Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6s
Ecological site name: Slickspot PE 44-64
Ecological site number: R080AY091OK

ZaHC2—Zaneis-Huska complex, 1 to 5 percent slopes, eroded

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Map Unit note: The soils in this complex occur in a regular and repeating pattern. They are so intermingled that individual areas of the named soils could not be separated at the reference scale of 1:24,000. These areas are, or have been cultivated, and are moderately eroded. In most areas, the upper part of the subsoil has been

incorporated into the plow layer. In some areas, surface rills and small gullies are common.
Prime Farmland class: All areas are prime farmland

Composition

Zaneis and similar soils: 50 percent
Huska and similar soils: 44 percent

Additional Components:
Renfrow: 6 percent

Component Description

Zaneis
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone and shale

Representative profile location: About 2,710 feet west and 1,450 feet south of the northeast corner, section 34 T. 23 N., R. 4 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 5 inches; slightly acid loam
BA—5 to 8 inches; slightly acid loam
Bt1—8 to 28 inches; slightly acid clay loam
Bt2—28 to 38 inches; slightly acid clay loam
BC—38 to 46 inches; neutral clay loam
Cr—46 to 50 inches; bedrock

Properties and Qualities

Slope: 1 to 5 percent
Depth to first restrictive layer: 40 to 60 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 7.5 inches (Moderate)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site name: Eroded Loamy Prairie PE 44-64
Ecological site number: R080AY856OK

Huska
Landscape: Uplands

Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Saline clayey residuum weathered from sandstone and shale

Representative profile location: About 2,220 feet west and 2,100 feet south of the northeast corner, section 34 T. 23 N., R. 4 E., Pawnee County, Oklahoma.

Typical Profile

A—0 to 7 inches; neutral loam
Btn1—7 to 19 inches; slightly alkaline clay
Btnz—19 to 42 inches; moderately alkaline clay loam
Btn2—42 to 54 inches; moderately alkaline clay loam
Cr—54 to 60 inches; bedrock

Properties and Qualities

Slope: 1 to 5 percent
Depth to first restrictive layer: 40 to 60 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.001 to 0.06 in/hr (Very slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Saline
Sodicity, representative within 40 inches: Sodic
Sodicity, maximum within 40 inches: Sodic
Representative total available water capacity to 60 inches: About 4.8 inches (Low)
Natural drainage class: Moderately well drained
Runoff: Very high
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 6s
Ecological site name: Eroded Slickspot PE 44-64
Ecological site number: R080AY891OK

ZanB—Zaneis loam, 1 to 3 percent slopes

Setting

Major land resource area: MLRA 80A—Central Rolling Red Prairies
Elevation: 800 to 1,295 feet (244 to 396 meters)
Mean annual precipitation: 34 to 39 inches (864 to 991 millimeters)
Mean annual air temperature: 57 to 60 degrees F (14 to 16 degrees C)
Frost-free period: 200 to 215 days
Prime Farmland class: All areas are prime farmland

Composition

Zaneis and similar soils: 80 percent

Additional Components:
Coyle: 10 percent

Huska: 5 percent
Renfrow: 5 percent

Component Description

Zaneis
Landscape: Uplands
Landforms: Hillslopes on low hills
Geomorphic positions, two-dimensional: Shoulder
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone and shale

Representative profile location: About 200 feet north and 2,600 feet west of the southeast corner, section 26, T. 21 N., R. 3 E., Noble County, Oklahoma.

Typical Profile

A—0 to 11 inches; slightly acid loam
BA—11 to 15 inches; slightly acid clay loam
Bt1—15 to 30 inches; slightly acid clay loam
Bt2—30 to 42 inches; slightly acid clay loam
BC—42 to 50 inches; neutral clay loam
Cr—50 to 55 inches; bedrock

Properties and Qualities

Slope: 1 to 3 percent
Depth to first restrictive layer: 40 to 60 inches to paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (Moderately slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (Slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 8.3 inches (Moderate)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within 80 inches

Interpretive Groups

Land capability nonirrigated: 2e
Ecological site name: Loamy Prairie PE 44-64
Ecological site number: R080AY056OK

Use and Management of the Soils

For general and detailed information regarding the use and management of the map units in this survey, see the soil reports and report descriptions on Web Soil Survey at http://websoilsurvey.nrcs.usda.gov.

A soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior. Information developed during a soil survey can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Interpretive ratings help engineers, planners, and others understand how soil properties influence important nonagricultural uses, such as building site development and construction materials. The ratings indicate the most restrictive soil features affecting the suitability of the soils for these uses.

Soils are rated in their natural state. Only normal practices for the rated use are considered. Unusual modifications to the site or soil material are not considered in the ratings. Where soils have limitations, engineers and others may be able to modify soil features or adjust the plans for a structure to compensate for most of the limitations. Most of these modifications, however, are costly. The final decision in selecting a site for a particular use generally involves weighing the costs of site preparation and maintenance.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use a survey to locate sources of sand, gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation. Health officials, highway officials, engineers, and others may also find a soil survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Range

Mark Moseley, range conservationist, Natural Resources Conservation Service, helped prepare parts of this section.

Range, grazed forest land, and native pasture provide forage for livestock in the survey area.

Range is defined as land on which the native vegetation (the climax, or natural potential, plant community) is predominantly grasses, grass-like plants, forbs, and shrubs suitable for grazing and browsing. Range includes natural grasslands, savannahs, many

wetlands, some deserts, tundra, and certain shrub and forb communities. Range receives no regular or frequent cultural treatment. The composition and production of the plant community are determined by soil, climate, topography, overstory canopy, and grazing management

Grazed forest land is defined as land on which the understory includes, as an integral part of the forest plant community, plants that can be grazed without significant impairment of other forest values.

Native pasture is defined as land on which the potential (climax) vegetation is forest but which is used and managed primarily for the production of native forage plants. Native pasture includes cutover forest land and forest land that has been cleared and is managed for native or naturalized forage plants.

Forty percent of Pawnee County is rangeland. Most range areas within the county are found on gently sloping to steep side slopes and a few narrow very gently sloping to sloping summits that are not economical to cultivate. A few native grass meadows that are managed for hay production are found in the central and north central part of the county. Three distinct rangeland types are present. In the southeastern part of the county most of the soils are loamy and are moderately deep or shallow over sandstone. These soils support an oak savannah that has low productivity because of the shallow rooting depth and low water holding capacity. In the northeast and western part of the county the soils are loamy and are dominantly moderately deep, with some shallow and deep soils over shale, and shale interbedded with sandstone. These soils support mid and tall grasses, and productivity is moderate. In the north-central, central, and south-central part of the county the soils are loamy and are moderately deep, with some shallow and deep soils over sandstone and sandstone interbedded with shale. The soils support mid and tall grasses that are moderately productive.

Approximately 75 percent of the annual production on rangeland grows in April, May, and June coinciding with spring rains and moderate temperatures. A secondary growth period generally occurs in September and October coinciding with fall rains and cooling temperatures.

Most of the local ranches and livestock farms are cow-calf operations. There are some pure stocker enterprises and some ranchers that diversify their cow-calf operation with stockers to provide greater flexibility.

Several livestock operations supplement the grazing of native rangeland with introduced grasses such as bermudagrass and bluestem. Forage crops are also used. Protein, hay, and small grain crops are used to supplement livestock through winter.

Droughts occur of varying lengths, with short term summer droughts being common. Longer periods of drought, some lasting several months, also happen frequently.

The pre-settlement vegetation evolved with periodic natural fires, droughts, migratory grazing by bison and impact from many other wildlife species. The bison would heavily impact an area and then move to another grazing range.

Early settlement brought continuous grazing and eliminated much of the high-quality vegetation on some range sites. Areas that were once open savannah range sites with a mixture of grasses, forbs and scattered trees, are now covered with oak, a few mid and tall grasses, and low successional grasses and forbs. Some prairie sites are now growing low successional grasses and forbs instead of tall grasses. The amount of forage presently produced may be less than half of that originally produced. Eastern redcedar has increased significantly on some sites because of the lack of prairie fires.

However, remnants of the original plant species are still found on most rangeland and progressive grazing management will allow these high quality plants to re-establish without re-seeding.

An ecological site for rangeland is a distinctive kind of land and vegetation with specific physical characteristics that makes it different from other kinds of land in its ability to produce a distinctive kind and amount of vegetation.

Many different ecological sites are in the survey area. Over historical time, the combination of plants best suited to a particular soil and climate became dominant. If the soil is not excessively disturbed, this group of plants is the natural plant community for the site. Natural plant communities are not static but vary slightly from year to year and place to place.

The relationship between soils and vegetation was ascertained during this survey; thus, ecological sites generally can be determined directly from the soil map. Soil properties that affect moisture supply and plant nutrients have the greatest influence on the productivity of range plants. Soil reaction, salt content, and a seasonal high water table are also important. The "Electronic Field Office Technical Guide," which is available at http://www.nrcs.usda.gov/technical/efotg/ or through the local offices of the Natural Resources Conservation Service, can provide specific information about ecological sites. Total production is the amount of vegetation that can be expected to grow annually on well managed rangeland. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruit of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are near the historical monthly average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture.

Dry weight is the total annual yield per acre of air-dry vegetation. Yields are adjusted to a percent of air-dry moisture content. The relationship of green weight to air-dry weight varies according to such factors as stage of maturity, exposure, amount of shade, recent rains, and unseasonable dry periods.

Characteristic vegetation consists of the grasses, forbs, and shrubs that make up most of the potential natural plant community on each soil. The plants are listed by common name. Under composition, the anticipated percentage of the total annual production is given for each species making up the characteristic vegetation. The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season.

Similarity Index

Similarity Index is the comparison from 1 to 100 percent of the present plant community to a vegetative state on an ecological site. NRCS uses similarity index two ways. The first is to use similarity index to compare the present vegetation on an ecological site to the presumed historic vegetation for that site. This comparison provides a basis to the client for knowing the extent and direction of changes that have taken place between current vegetation and historic vegetation. A similarity index of 70 would suggest that the present plant community contain 70 percent of the presumed historic plant community for that site. The second is to use similarity index as a measure of how near the current plant community is to the landowners goal for the land. The management goal for rangeland is not necessarily a similarity index of 100 as compared to the historic plant community. Therefore, the similarity index can represent the percentage of the plant community that resembles a desired plant community.

Abnormal disturbances that change the natural plant community include repeated overuse by livestock, excessive burning, erosion, and cultivation. Grazing animals select the most palatable plants. These plants will eventually die if they are continually grazed at a severity that does not allow for recovery. A very severe disturbance can completely destroy the natural community. Under these conditions, the less desirable plants, such as annuals and weed-like plants, can increase. If the plant community and the soils have not

deteriorated significantly, it eventually can return to predominantly natural plants if proper range management is applied.

Knowledge of the ecological site is necessary as a basis for planning and applying the management needed to maintain or improve the desired plant community for selected uses. Such information is needed to support management objectives, planned grazing systems, stocking rates, suitable wildlife management practices, potential for recreational uses, and condition of watersheds.

Rangeland Management

Rangeland management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the similarity index.

Effective range management conserves rainfall, enhances water quality, reduces the hazard of downstream flooding, improves yields, provides forage for livestock and wildlife, enhances recreational opportunities, and protects the soil. The main management concern is recognizing important changes in the plant cover or the range trend which occur gradually and may be overlooked.

Each range manager should evaluate the type of plant community that best supports the ranch and then apply management and ecological principles to achieve the goals. The desired plant community should be within the capabilities of the land.

The primary range management practices used in Pawnee County include prescribed grazing, stock-water developments, and fences. If undesirable plants become dominant, range seeding, brush management, or prescribed burning are commonly used.

Range management includes four major considerations:

1. Grazing distribution is achieved by managing livestock to graze all parts of the grazing unit equally.

2. Selective grazing occurs because animals graze preferred plants to balance their diets. If selective grazing occurs repeatedly, the preferred plants are damaged.

3. A proper stocking rate is achieved by balancing animal numbers with forage production.

4. Rest periods occur during which time grazed plants are given enough rest to recover and to maintain growth.

It is important to remember that forage production is controlled by rainfall while composition is determined by grazing management.

Setting the stocking rate is not an exact science because there are influences from grazing management systems, season of use, mix of livestock, and seasonal forage production. Some rules of thumb, however, can be helpful. To maintain a nutritional cover of plants, about 50 percent, of the annual growth of the key or most important grazing plants, should remain at the end of the grazing season. Plants can be removed not only through grazing by livestock but also through grazing by rodents, insects, and wildlife; and through the deterioration caused by climatic variations. Because of these factors, a safe initial stocking rate for livestock should be calculated on the basis of 25 percent of the total annual growth, by weight, of the vegetation.

For example, production on the Loamy Prairie Ecological Site with a similarity index above 70 to the historic plant community for an average season could be 3,500 pounds per acre of air-dry grasses, forbs, and limited woody species. Twenty five percent of this is 875 pounds per acre.

A 1,000-pound cow and her calf is equivalent to one animal unit (AU) and will consume about 2.6 percent of her body weight (26 pounds) of forage per day. So, in one month, an animal unit will consume 790 pounds of native vegetation, depending on the quality and stage of growth of the plants (26 pounds per day times 365 days per year divided by 12 months per year).

Dividing 875 pounds (forage allocation) by 26 pounds (forage required per day for one animal unit) suggests that 1 acre of Loamy Prairie Ecological Site with a similarity

index of 70 will feed one cow for 33.6 days. To convert forage available from 1 acre to animal unit months (AUM), the available forage (875 pounds) is divided by the amount required to feed an animal unit for 1 month (790 pounds). One acre will provide 1.1 AUM of grazing. Therefore, 10.9 acres will feed one cow for 12 months in this example. Another approach is to calculate the annual forage needs of an animal unit (790 pounds per month times 12 months equals 9,490 pounds). Dividing the 875 pounds of usable forage per acre into the 9,490 pounds needed by the cow reveals that approximately 10.9 acres is needed for one cow annually. Stocking rate calculation should be adjusted for animal size, grazing system, and grazing season.

More information about planning a grazing program is available from the local office of the Natural Resources Conservation Service or the National Range and Pasture Handbook at http://www.glti.nrcs.usda.gov.

Ecological Site Descriptions

Thirty-four ecological sites are recognized in Pawnee County. The ecological site identifier has eleven characters. The ‘R’ indicates an ecological site. The next four characters identify the major land resource area, the sixth character identifies the major land resource unit subdivision, the next three characters identify the individual ecological site number, and the final two characters identify the state. This is followed by the proper name for the ecological site. The following descriptions list the plants that are characteristic of the sites. Detailed ecological site descriptions are available at the local office of the Natural Resources Conservation Service.

R076XY010OK, Claypan Prairie (Eastern) PE 54-62. This site is in areas of nearly level to moderately sloping soils on uplands. The soils have a subsoil of dense clay. The historic climax vegetation includes little bluestem, big bluestem, switchgrass, Indiangrass, meadow dropseed, tall dropseed, and Scribner panicum. Legumes include slimflower, scurfpea, and wild indigo. Forbs include gayfeathers, heath aster, and ashy sunflower.

R076XY098OK, Very Shallow PE 54-62. This site is in areas of nearly level to gently sloping, very shallow soils. The historic climax vegetation is predominantly blue grama, hairy grama, and sideoats grama. Big bluestem, little bluestem, Indiangrass, and switchgrass are in crevices of the deeper soils. Forbs include cobaea beardtongue, willowleaf sunflower, and dotted gayfeather.

R080AY001OK, Alkali Bottomland PE 44-64. This site is in areas of nearly level to gently sloping, somewhat poorly drained soils on bottomlands. The historic climax vegetation includes alkali sacaton, western wheatgrass, vine mesquite, inland saltgrass, switchgrass, and eastern gamagrass. Forbs include narrowleaf rhombopod, catclaw sensitive-brier, yellow neptunia, dotted gayfeather, ironweed, curlycup gumweed, curly dock, seacoast sumpweed, western ragweed, yellow thistle, common yarrow, and white heath aster. Shrubs and woody plants include pricklypear, honey mesquite, American elm, black willow, and willow baccharis.

R080AY010OK, Claypan Prairie (North) PE 44-64. This site is on uplands in areas of nearly level to gently sloping, deep, loamy soils that have a dense, clayey subsoil. The historic climax vegetation includes little bluestem, big bluestem, switchgrass, dropseed species, Indiangrass, Canada wildrye, sideoats grama, and eastern gamagrass. Forbs include Maximilian sunflower, compassplant, western ragweed, Louisiana sagewort, false boneset, rainlily, Carolina larkspur, purple coneflower, and daisy fleabane. Legumes include white prairie clover, prairie clover species, Illinois bundleflower, littleleaf sensitive-briar, and slimleaf scurfpea. Shrubs and vines include leadplant, ceanothus, smooth sumac, and buckbrush.

R080AY018OK, Deep Sand Savannah PE 44-64. This site is in areas of nearly level to moderately steep, coarse textured soils. The historic climax vegetation includes big bluestem, sand bluestem, little bluestem, Indiangrass, switchgrass, broadleaf uniola, beaked panicum, purpletop, tall dropseed, Scribner panicum, and sand lovegrass. Forbs

include perennial lespedeza, goldenrod, white heath aster, and Baldwin ironweed. Shrubs and vines include Virginia creeper, greenbrier, poison ivy, and grape. Woody species in the overstory include post oak, blackjack oak, hickory, winged elm, and persimmon.

R080AY022OK, Dune PE 44-64. This site is in areas of undulating to rolling, very deep soils that have a texture of fine sand, a high rate of water infiltration, and low water storage capacity. The historic climax vegetation includes giant sandreed, sand bluestem, little bluestem, sand lovegrass, switchgrass, sand paspalum, fall witchgrass, red lovegrass, hairy grama, hairy grama, and sand dropseed. Shrubs include sand sagebrush and skunkbush.

R080AY045OK, Heavy Bottomland PE 44-64. This site is on bottomlands. The soils are clayey and droughty but are excessively wet during periods of high rainfall. The historic climax vegetation includes switchgrass, prairie cordgrass, Virginia wildrye, western wheatgrass, vine mesquite, buffalograss, longspike tridens, white tridens, and Texas wintergrass. Woody species include mesquite.

R080AY050OK, Loamy Bottomland PE 44-64. This site is on flood plains or terraces. The soils are nearly level to gently sloping, loamy, and very deep. They are subject to stream overflow and runoff from hillsides. The historic climax vegetation includes big bluestem, switchgrass, Indiangrass, eastern gamagrass, Florida paspalum, and little bluestem. Cool-season grasses include Canada wildrye, Virginia wildrye, Texas bluegrass, and western wheatgrass. Forbs include Maximilian sunflower, stiff sunflower, and Jerusalem artichoke. Woody species include elm, willow, pecan, oak, cottonwood, green ash, and coralberry.

R080AY056OK, Loamy Prairie PE 44-64. This site is in areas of deep, loamy soils on uplands. The historic climax vegetation includes little bluestem, big bluestem, Indiangrass, switchgrass, Canada wildrye, sideoats grama, and blue grama. Legumes include leadplant, wild indigo, scurfpea, and prairie acacia. Woody species are rare.

R080AY068OK, Sandy Bottomland PE 44-64. This site is in areas of sandy, droughty soils that are subject to wind erosion and are on first and second bottoms. The historic climax vegetation includes sand bluestem, Indiangrass, little bluestem, and switchgrass. Woody species include willow and cottonwood.

R080AY073OK, Sandy Prairie PE 44-64. This site is in areas of deep, moderately sandy soils on uplands that have hummocky or gently rolling to steeply rolling topography. The historic climax vegetation includes sand bluestem, little bluestem, Indiangrass, switchgrass, sideoats grama, and blue grama. Woody species include skunkbush.

R080AY080OK, Shallow Clay Prairie PE 44-64. This site is dominantly in areas of severely eroded, gently sloping to strongly sloping, shallow, raw, clayey soils that are underlain by shale. The shale is commonly exposed on the steeper slopes. Natural erosion on this site results in bare soil. The historic climax vegetation includes sideoats grama, little bluestem, and hairy grama.

R080AY083OK, Shallow Prairie PE 44-64. This site is in areas of gently sloping to moderately steep, shallow soils in prairies. Rock outcrop is common on the surface and typically covers 15 to 20 percent of the area. The historic climax vegetation includes little bluestem, big bluestem, Indiangrass, switchgrass, dropseed species, and Scribner panicum. Legumes include catclaw sensitive-brier, Illinois bundleflower, Virginia tephrosia, leadplant, and white, purple, and roundhead prairie clovers.

R080AY090OK, Meadow PE 44-64. This site is on level bottomlands, typically along small streams that drain sandy areas. The historic climax vegetation includes bushy bluestem, sedges, rushes, switchgrass, Indiangrass, big bluestem, beaked panicum, little bluestem, broomsedge bluestem, and indigobush amorpha. Woody species include willow and cottonwood.

R080AY091OK, Slickspot PE 44-64. This site is on uplands in areas of level to gently sloping, deep, loamy soils that have a clayey, blocky, alkali subsoil. The historic

climax vegetation includes alkali sacaton, switchgrass, western wheatgrass, tall dropseed, white tridens, blue grama, dropseed, gummy lovegrass, fall witchgrass, yellow neptunia, mourning lovegrass, and purple threeawn. Forbs include dotted gayfeather, curly cup gumweed, goldenweed, and hairy goldenaster.

R080AY098OK, Very Shallow PE 44-64. This site is in areas of nearly level to gently sloping, very shallow soils. The historic climax vegetation includes buffalograss, blue grama, hairy grama, sideoats, grama, big bluestem, little bluestem, Indiangrass, tall dropseed, fall witchgrass, silver bluestem, switchgrass, sensitive-briar, prairie clover, and willowleaf sunflower.

R080AY810OK, Eroded Claypan Prairie (North) PE 44-64. This site is in areas where part or all of the A horizon has been removed by erosion. The soil integrity has been changed. Because of the past erosion and the probability of ongoing erosion, the plant community can be determined only by onsite inspection. The productivity of this site has not been determined. See R080AY010OK, Claypan Prairie (North) PE 44-64, for the historic climax vegetation on the parent site.

R080AY856OK, Eroded Loamy Prairie PE 44-64. This site is in areas where part or all of the A horizon has been removed by erosion. The soil integrity has been changed. Because of the past erosion and the probability of ongoing erosion, the plant community can be determined only by onsite inspection. The productivity of this site has not been determined. See R080AY056OK, Loamy Prairie PE 44-64, for the historic climax vegetation on the parent site.

R080AY873OK, Eroded Sandy Prairie PE 44-64. This site is in areas where part or all of the A horizon has been removed by erosion. The soil integrity has been changed. Because of the past erosion and the probability of ongoing erosion, the plant community can be determined only by onsite inspection. The productivity of this site has not been determined. See R080AY073OK, Sandy Prairie PE 44-64, for the historic climax vegetation on the parent site.

R080AY883OK, Eroded Shallow Prairie PE 44-64. This site is in areas where part or all of the A horizon has been removed by erosion. The soil integrity has been changed. Because of the past erosion and the probability of ongoing erosion, the plant community can be determined only by onsite inspection. The productivity of this site has not been determined. See R080AY083OK, Shallow Prairie PE 44-64, for the historic climax vegetation on the parent site.

R080AY891OK, Eroded Slickspot PE 44-64. This site is in areas where part or all of the A horizon has been removed by erosion. The soil integrity has been changed. Because of the past erosion and the probability of ongoing erosion, the plant community can be determined only by onsite inspection. The productivity of this site has not been determined. See R080AY091OK, Slickspot PE 44-64, for the historic climax vegetation on the parent site.

R084AY018OK, Deep Sand Savannah PE 48-64. This site is in areas of nearly level to moderately steep, coarse textured soils on uplands. The historic climax vegetation includes big bluestem, sand bluestem, Indiangrass, little bluestem, switchgrass, broadleaf uniola, beaked panicum, purpletop, tall dropseed, Scribner panicum, and sand lovegrass. Woody species include post oak, blackjack oak, hickory, winged elm, and persimmon.

R084AY050OK, Loamy Bottomland PE 48-64. This site is in areas of deep, loamy soils on bottomlands that are subject to occasional to frequent overflow from streams and runoff from hillsides. The historic climax vegetation includes big bluestem, switchgrass, Indiangrass, eastern gamagrass, Florida paspalum, Canada wildrye, Virginia wildrye, Texas bluegrass, and western wheatgrass. Forbs include Maximilian sunflower, stiff sunflower, and Jerusalem artichoke. Woody species include elm, willow, pecan, oak, cottonwood, green ash, and coralberry.

R084AY075OK, Sandy Savannah PE 44-64. This site is in areas of gently sloping to steep fine sandy loams that support mid and tall grasses mixed with an overstory of oak. The historic climax vegetation includes sand bluestem, little bluestem, Indiangrass,

switchgrass, and sideoats grama. Forbs include Maximilian sunflower, ashy sunflower, stiff sunflower, compassplant, daisy fleabane, goldenrods, and numerous others in trace amounts. Woody species include post oak, blackjack oak, and hickory.

R084AY079OK, Savannah Breaks PE 48-64. This site is in areas of savannah rangeland that have steep, rocky slopes. The historic climax vegetation includes big bluestem, little bluestem, Indiangrass, switchgrass, hairy grama, Scribner panicum, rock muhly, hairawn muhly, and nimblewill muhly. Woody species include post oak and blackjack oak.

R084AY089OK, Shallow Savannah PE 48-64. This site is in rolling savannahs that have an overstory of post oak and blackjack oak. The historic climax vegetation includes little bluestem, big bluestem, switchgrass, Indiangrass, Canada wildrye, hairy grama, tall dropseed, and meadow dropseed. Legumes include lespedeza, roundhead lespedeza, slender lespedeza, prairie clover, and Virginia tephrosia. Woody species include post oak and blackjack oak.

R084AY818OK, Eroded Deep Sand Savannah PE 48-64. This site is in areas where part or all of the A horizon has been removed by erosion. The soil integrity has been changed. Because of the past erosion and the probability of ongoing erosion, the plant community can be determined only by onsite inspection. The productivity of this site has not been determined. See R084AY018OK, Deep Sand Savannah PE 48-64, for the historic climax vegetation on the parent site.

R084AY876OK, Eroded Sandy Savannah PE 48-64. This site is in areas where part or all of the A horizon has been removed by erosion. The soil integrity has been changed. Because of the past erosion and the probability of ongoing erosion, the plant community can be determined only by onsite inspection. The productivity of this site has not been determined. See R084AY075OK, Sandy Savannah PE 44-64, for the historic climax vegetation on the parent site.

R112XY010OK, Claypan Prairie PE 62-80. This site is in areas of nearly level to moderately sloping soils on uplands. The historic climax vegetation includes little bluestem, big bluestem, switchgrass, Indiangrass, meadow dropseed, tall dropseed, and Scribner panicum. Legumes include prairie scurfpea, Illinois bundleflower, and leadplant. Forbs include blacksamson, gayfeathers, heath aster, ashy sunflower, and wild indigo. Woody species include poison ivy.

R112XY050OK, Loamy Bottomland PE 62-80. This site is on bottomlands. The soils are deep and loamy. The historic climax vegetation includes big bluestem, Indiangrass, switchgrass, eastern gamagrass, prairie cordgrass, beaked panicum, Canada wildrye, Virginia wildrye, and switchcane. Legumes include leadplant and Illinois bundleflower. Forbs include goldenrod, wholeleaf rosinweed, blacksamson, and Maximilian sunflower. Woody species include American elm, green ash, pecan, and oak.

R112XY059OK, Loamy Prairie (Northeast) PE 62-80. This site is on uplands. The soils are nearly level to moderately steep and are on convex slopes of low ridges and on the side slopes of moderately steep ridges in broad valleys. The historic climax vegetation includes big bluestem, little bluestem, Indiangrass, switchgrass, jointtail, purpletop, and dropseed species.

R112XY083OK, Shallow Prairie (Central) PE 62-80. This site is in areas of rocky sandstone and limestone slopes and ridges in the Bluestem Hills and Cherokee Prairies major land resource areas. The historic climax vegetation includes little bluestem, big bluestem, Indiangrass, switchgrass, Canada wildrye, sideoats grama, tall dropseed, meadow dropseed, blue grama, and buffalograss. Woody species include coralberry, hackberry, winged elm, and persimmon.

R112XY091OK, Slickspot PE 62-80. This site is in crusted, alkali spots on uplands. The historic climax vegetation includes alkali sacaton, switchgrass, white tridens, tall dropseed, blue grama, dropseed, purple threeawn, mourning lovegrass, gummy lovegrass, and fall witchgrass. Legumes include yellow neptunia. Forbs include rhombopod, pricklypear, curlycup gumweed, wax goldenweed, and hairy goldenaster.

R112XY856OK, Eroded Loamy Prairie PE 62-80. This site is in areas where part or all of the A horizon has been removed by erosion. The soil integrity has been changed. Because of the past erosion and the probability of ongoing erosion, the plant community can be determined only by onsite inspection. The productivity of this site has not been determined. See R112XY056OK, Loamy Prairie PE 62-80, for the historic climax vegetation on the parent site.

Formation and Classification of the Soils

This section summarizes the major factors of soil formation and describes the system of soil classification. The classification of each soil in the survey area is shown in Table 5. The Official Soil Series Descriptions, including the range of characteristics of the soils for the series in this survey area are online at http://soils.usda.gov/technical/classification/osd/. Characteristics of the soil and the material in which it formed are identified for each soil series. A pedon, a small three-dimensional area of soil, which is typical of the series is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (Soil Survey Division Staff, 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff, 1999).

Formation of the Soils

Soil is produced by the action of soil-forming processes on materials deposited or accumulated by geologic agencies. The characteristics of the soil at any given point are determined by the physical and mineralogical composition of the parent materials; the climate under which the soil material has accumulated and existed since accumulation; the plant and animal life on and in the soil; the relief, or lay of the land; and the length of time the forces of soil development have acted on the soil material.

Climate and vegetation are the active factors of soil formation. They act on parent material that has accumulated through the weathering of rocks and slowly change it into a natural body that has genetically related horizons. The effects of climate and vegetation are conditioned by relief. Parent material also affects the kind of profile that can be formed and, in extreme cases, determines it almost entirely. Finally, time is needed for the changing of the parent material into a soil profile. The time may be long or short, but some time is always required for differentiation of horizons. Generally, a long time is required for the development of distinct horizons.

The factors of soil formation are so closely interrelated in their effects that few generalizations can be made regarding the effects of any one unless conditions are specified for the other four.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999 and 2003). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. The categories are described in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in sol. An example is Mollisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Ustoll (Ust, meaning dry, plus oll, from Mollisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Argiustolls (Argi, meaning argillic horizonation, plus ustoll, the suborder of the Mollisols that has an ustic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective Typic identifies the subgroup that typifies the great group. An example is Typic Argiustolls.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, thickness of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-silty, mixed, superactive, thermic Typic Argiustolls.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

Table 5.--Classification of the Soils

Soil name	Family or higher taxonomic class
Agra*	Fine, mixed, superactive, thermic Udertic Paleustolls
Apperson	Fine, smectitic, thermic Aquic Hapluderts
Asher	Fine-silty, mixed, superactive, thermic Fluventic Haplustolls
Ashport	Fine-silty, mixed, superactive, thermic Fluventic Haplustolls
Bartlesville	Fine-loamy, siliceous, active, thermic Oxyaquic Hapludalfs
Bates	Fine-loamy, siliceous, active, thermic Typic Argiudolls
Bethany	Fine, mixed, superactive, thermic Pachic Paleustolls
Bigheart	Loamy, siliceous, active, thermic Lithic Eutrudepts
Brewer	Fine, mixed, superactive, thermic Udertic Argiustolls
Chickasha	Fine-loamy, mixed, active, thermic Udic Argiustolls
Cleora	Coarse-loamy, mixed, active, thermic Fluventic Hapludolls
Coyle*	Fine-loamy, siliceous, active, thermic Udic Argiustolls
Dale	Fine-silty, mixed, superactive, thermic Pachic Haplustolls
Darnell	Loamy, siliceous, active, thermic, shallow Udic Haplustepts
Derby	Mixed, thermic Lamellic Ustipsamments
Doolin	Fine, smectitic, thermic Typic Natrustolls
Dougherty	Loamy, mixed, active, thermic Arenic Haplustalfs
Drummond	Fine, mixed, superactive, thermic Mollic Natrustalfs
Dwight**	Fine, smectitic, mesic Typic Natrustolls
Easpur	Fine-loamy, mixed, superactive, thermic Fluventic Haplustolls
Eufaula	Siliceous, thermic Psammentic Paleustalfs
Foraker	Fine, smectitic, thermic Udertic Argiustolls
Gaddy	Sandy, mixed, thermic Udic Ustifluvents

Table 5.--Classification of the Soils—Continued

Soil name	Family or higher taxonomic class
Goodnight	Mixed, thermic Typic Ustipsamments
Gowen	Fine-loamy, mixed, superactive, thermic Cumulic Haplustolls
Grainola	Fine, mixed, active, thermic Udertic Haplustalfs
Harrah	Fine-loamy, siliceous, active, thermic Ultic Paleustalfs
Highview	Clayey, mixed, active, thermic, shallow Udic Haplustepts
Huska	Fine, mixed, superactive, thermic Mollic Natrustalfs
Keokuk	Coarse-silty, mixed, superactive, thermic Fluventic Haplustolls
Kingfisher	Fine-silty, mixed, active, thermic Udic Argiustolls
Kirkland	Fine, mixed, superactive, thermic Udertic Paleustolls
Konawa	Fine-loamy, mixed, active, thermic Ultic Haplustalfs
Lawrie	Fine-silty, mixed, superactive, thermic Pachic Argiustolls
Lela	Fine, mixed, superactive, thermic Udic Haplusterts
Lucien***	Loamy, mixed, superactive, thermic, shallow Udic Haplustolls
Lula	Fine-silty, mixed, active, thermic Typic Argiudolls
Masham	Clayey, mixed, active, thermic, shallow Udic Haplustepts
Milan	Fine-loamy, mixed, superactive, thermic Udic Argiustolls
Miller	Fine, mixed, superactive, thermic Udertic Haplustolls
Minco	Coarse-silty, mixed, superactive, thermic Udic Haplustolls
Mulhall	Fine-loamy, siliceous, active, thermic Udic Paleustolls
Navina	Fine-loamy, mixed, active, thermic Udic Argiustolls
Niotaze	Fine, smectitic, thermic Albaquic Hapludalfs
Norge*	Fine-silty, mixed, active, thermic Udic Paleustolls
Oscar	Fine-silty, mixed, superactive, thermic Typic Natrustalfs
Pawhuska	Fine, mixed, superactive, thermic Mollic Natrustalfs
Piedmont	Fine, mixed, superactive, thermic Udertic Argiustolls
Port	Fine-silty, mixed, superactive, thermic Cumulic Haplustolls
Prue*	Fine-loamy, siliceous, active, thermic Mollic Paleudalfs
Pulaski	Coarse-loamy, mixed, superactive, nonacid, thermic Udic Ustifluvents
Renfrow*	Fine, mixed, superactive, thermic Udertic Paleustolls
Seminole*	Fine, mixed, superactive, thermic Typic Natrustolls
Shidler	Loamy, mixed, active, thermic Lithic Haplustolls
Slaughterville	Coarse-loamy, mixed, superactive, thermic Udic Haplustolls
Steedman	Fine, smectitic, thermic Udertic Haplustalfs
Stephenville	Fine-loamy, siliceous, active, thermic Ultic Haplustalfs
Tabler	Fine, smectitic, thermic Udertic Argiustolls
Talihina	Clayey, mixed, active, thermic, shallow Aquic Hapludolls
Tearney	Clayey over sandy or sandy-skeletal, mixed, superactive, thermic Fluventic Hapludolls
Teller	Fine-loamy, mixed, active, thermic Udic Argiustolls
Vanoss	Fine-silty, mixed, superactive, thermic Udic Argiustolls
Waurika	Fine, smectitic, thermic Vertic Argialbolls
Wisby	Coarse-loamy, mixed, superactive, thermic Udic Argiustolls
Wolco	Fine, mixed, active, thermic Pachic Argiustolls
Yahola	Coarse-loamy, mixed, superactive, calcareous, thermic Udic Ustifluvents
Zaneis*	Fine-loamy, siliceous, active, thermic Udic Argiustolls

Notes:

* These series are taxadjuncts in some map units. The mollic colors are slightly thinner than allowed because of sheet/rill erosion. The use, behavior, management, and interpretations of these soils are similar to the un-eroded condition.

** This series is a taxadjunct. It is slightly warmer than allowed in the series range. The use, behavior, management, and interpretations of these soils are similar to the slightly cooler, typical condition.

*** This series is a taxadjunct in some map units. The percentage of resistant quartz sand is slightly higher than allowed. The use, behavior, management, and interpretations of these soils are similar to the typical condition.

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Glossary

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above. A claypan is commonly hard when dry and plastic or stiff when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deep soil. A soil that is 40 to 60 inches deep over bedrock or to other material that restricts the penetration of plant roots.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained*, and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A, O, or E horizon. The B horizon is in part a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) red or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—f*aint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor on the basis of how much the present plant community has departed from the potential.

Range site. An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association

of species that differ from those on other range sites in kind or proportion of species or total production.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Saline soil. A soil containing soluble salts in an amount that impairs the growth of plants. A saline soil does not contain excess exchangeable sodium.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Series, soil. A group of soils that have profiles that are almost alike. All the soils of a given series have horizons that are similar in composition, thickness, and arrangement.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Slickspot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is silty or clayey, is slippery when wet, and is low in productivity.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Stone line. A concentration of coarse rock fragments in soils that generally represents an old weathering surface. In a cross section, the line may be one stone or more thick. The line generally overlies material that weathered in place, and it is ordinarily overlain by sediment of variable thickness.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay*, and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Water tables. The highest part of the soil or underlying rock material that is wholly saturated with water. In some places an upper, or perched, water table may be separated from a lower one by a dry zone.

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